

Frontiers in Education 2015

Launching a New Vision in Engineering Education

October 21-24, 2015 | Camino Real Hotel & Conference Center | El Paso, Texas

FINAL PROGRAM



Organized and sponsored by:



IEEE

IEEE  computer society



Table of Contents

Conference at a Glance.....	iv
Welcome from the General Chair	v
Welcome from the Program Co-Chairs.....	vi
Message from the FIE Steering Committee.....	vii
FIE 2015 Planning Committee.....	viii
FIE 2015 Steering Committee.....	viii
Future FIE Conferences	viii
Sponsors	x
FIE 2015 Exhibitors.....	xii
Exhibitor Showcase Presentations.....	xii
Special National Science Foundation Presentation.....	xii
Meetings at FIE	xiii
Workshops.....	xiii
Plenary Session.....	xvii
New Faculty Fellow Program	xviii
Conference Amenities.....	xix
Award Selection Committee Chairs.....	xx
ASEE ECE Division Hewlett-Packard Frederick Emmons Terman Award	xxi
IEEE Education Society Hewlett-Packard Harriett B. Rigas Award.....	xxiii
Benjamin J. Dasher Best Paper Award	xxvi
Frontiers in Education Conference Helen Plants Award Best Nontraditional Session at FIE 2014.....	xxvii
Frontiers in Education Conference Ronald J. Schmitz Award	xxx
IEEE Education Society William E. Sayle II Award for Achievement in Education	xxxii
IEEE Transactions on Education Best Paper Award.....	xxxiv
Distinguished Chapter Leadership Award.....	xxxv
IEEE Education Society Edwin C. Jones, Jr. Meritorious Service Award	xxxvi
IEEE Education Society Mac Van Valkenburg Early Career Teaching Award	xxxviii
IEEE Education Society Distinguished Member Award	xxxix
Student Leadership Award	xl
IEEE Fellow Awards	xli
Reviewers.....	xliv
Session Chairs.....	lix

Session Grid – Wednesday, October 21st	lxiv
Session Grid – Thursday, October 22nd.....	lxv
Session Grid – Friday, October 23rd	lxvi
Session Grid – Saturday, October 24th.....	lxvii
Technical Sessions Table of Contents	lxviii

Conference at a Glance

Wednesday, October 21

11:00 AM - 8:00 PM	Registration Open
1:00 PM - 4:00 PM	Workshop Session 1
5:00 PM - 9:00 PM	Workshop Session 2

Thursday, October 22

8:00 AM - 6:00 PM	Registration Open
8:00 AM - 9:00 AM	Focus on New Attendees Breakfast (<i>included in conference registration</i>)
9:00 AM - 10:30 AM	Plenary Session
10:30 AM - 6:00 PM	Exhibit Hall Open
10:30 AM - 11:00 AM	Exhibit Hall Break
11:00 AM - 12:30 PM	Technical Sessions (T1)
12:45 PM - 2:15 PM	HP Terman and Rigas Awards Lunch (<i>included in conference registration</i>)
2:30 PM - 4:00 PM	Technical Sessions (T2)
4:00 PM - 4:30 PM	Exhibit Hall Break
4:30 PM - 6:00 PM	Technical Session (T3)
7:00 PM - 10:00 PM	Reception (<i>included in conference registration</i>)

Friday, October 23

8:00 AM - 6:00 PM	Registration Open
8:00 AM - 9:00 AM	Breakfast (<i>included in conference registration</i>)
9:00 AM - 10:30 AM	Technical Sessions (F1)
10:00 AM - 5:30 PM	Exhibit Hall Open
10:30 AM - 11:00 AM	Exhibit Hall Break
11:00 AM - 12:30 PM	Technical Sessions (F2)
12:45 PM - 2:15 PM	Lunch (<i>included in conference registration</i>)
2:30 PM - 4:00 PM	Technical Sessions (F3)
4:00 PM - 5:00 PM	Focus on Exhibits and New Faculty Fellows
5:00 PM - 6:30 PM	Technical Sessions (F4)
7:30 PM - 10:00 PM	Reception and Awards Banquet (<i>additional ticket required</i>)

Saturday, October 24

8:00 AM - 5:00 PM	Registration Open
8:00 AM - 9:00 AM	Breakfast (<i>included in conference registration</i>)
9:00 AM - 10:30 AM	Technical Sessions (S1)
10:30 AM - 11:00 AM	Break
11:00 AM - 12:30 PM	Technical Sessions (S2)
12:45 PM - 2:15 PM	Lunch (<i>included in conference registration</i>)
2:30 PM - 4:00 PM	Technical Sessions (S3)
4:00 PM - 4:30 PM	Break
4:30 PM - 6:00 PM	Technical Sessions (S4)

Welcome from the General Chair

2015 is the year of the 45th Annual Frontiers in Education (FIE) Conference. It is good to see that we have been doing this conference for 45 years already and I am personally grateful to be a part of it. As always I am privileged to have the help of the sponsoring entities: the IEEE Education Society, the IEEE Computer Society, and the ASEE Educational Research and Methods Division, through the FIE Steering Committee. Beyond that, I am blessed to have the input from my home institution New Mexico State University and our neighbor, the University of Texas at El Paso.

During your visit here, you can enjoy the warm autumn weather of the Southwest United States as well as the newly renovated downtown area of El Paso Texas.

Our theme this year is “Launching a New Vision in Engineering Education”. This fits well with the latest addition to the southern New Mexico businesses, the brand new Spaceport America, as well as other space related facilities such as the National Radio Astronomy Observatory Very Large Array Telescope and the Apache Peak Observatory, home of the Sloan Digital Sky Survey. It would be my honor to schedule tours of any of these facilities and you can contact me directly to do so. However, you need to be ready for long travel times since the closest of these is two hours from the conference center.



Once again this year we have more than 500 speakers and many pre-conference workshops. These continue a long tradition of some of the best educational innovations and research in engineering and computing. We are thankful to these speakers and to the co-chairs of the Program Committee who have selected and organized the papers submitted: Senay Purzer, ASEE Program Co-Chair; Mani Mina, IEEE Education Society Program Co-Chair; Ari Korhonen, IEEE Computer Society Program Co-Chair; Holly Matusovich, Special Session & Workshop Chair; and James Huff, New Faculty Fellows Chair. I also thank the FIE Steering Committee who guided me through the preparation with much needed professional advice and encouragement.

Finally, I cannot be grateful enough for the logistic support of Assistant to the General Chairs, Kevin Curry, and to Conference Catalysts, for their work on the computer applications and the web site.

Special thanks to our sponsors - New Mexico State University and the University of Texas at El Paso; as well as our other sponsors: Hewlett Packard, VentureWell, and the Markkula Center for Applied Ethics.

I hope you enjoy your stay in the home of cowboys, Native Americans, and Mexican culture, and I look forward to meeting each and every one of you.



Conference General Chair

Michael DeAntonio, NMSU, Las Cruces, New Mexico

Welcome from the Program Co-Chairs

Dear Colleagues,

It gives us great pleasure to welcome you to El Paso, Texas, and the 2015 Frontiers in Education Conference.

As conference programme co-chairs we have had the stimulating challenge of managing the reviewing, selection, and scheduling of submissions for what promises to be a truly outstanding conference. This year we received over 700 submissions, from which we have selected approximately 400 for presentation in different formats. The result is a research and innovation packed programme that commences with a day of pre-conference workshops on Wednesday, followed by three full days of presentations, special sessions, panels, and last, but not least, many opportunities over breakfast, lunch and dinner events to meet new friends, renew old acquaintanceships and engage in inspiring debate and discussion.

We have spent a most exciting six months preparing the technical programme. We hope that you enjoy the fruits of our labour, and find the conference as stimulating and interesting to attend, as we have found the process of putting it all together.

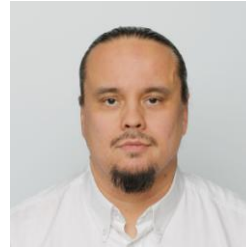
Welcome to FIE 2015 in El Paso!



Senay Purzer
ASEE ERM



Mani Mina
IEEE Education Society



Ari Korhonen
IEEE Computer Society

Message from the FIE Steering Committee Chair

Welcome! And ¡Bienvenidos a El Paso!

The organizers of the 45th annual Frontiers in Education conference are pleased to offer you this opportunity to network and engage in engineering education research that is on the frontier. The FIE Steering Committee welcomes you to El Paso, TX after our successful time in Madrid last year.

If you are like me, you come to FIE to see old friends and find new ideas. I hope you come away from this conference with a renewed sense of commitment to the improvement engineering education and that you have expanded your network of colleagues. For those of you that are “regulars”, I hope you will share your sense of community with those that are new to FIE.

The Steering Committee continues to iterate on ways to improve the conference. This year will be our second time going with a paperless conference. We believe using our resources this way is responsible and keeps us on the frontier. We are also investigating ways to improve the experience of both authors and reviewers in our peer review process within EDAS. Lastly, we are improving the documentation of our processes, so that new FIE volunteers will have a better understanding of their roles. Please continue to provide feedback so we can iterate more effectively.

Below is the list of all current members on the FIE Steering Committee. You can find us at the conference as we will be wearing Steering Committee ribbons on our conference badges. We represent you and your needs for this conference. Please let us know how to improve FIE.

ASEE Educational Research and Methods Division Representatives

- Beth Eschenbach (Chair), Humboldt State University, beth@humboldt.edu
- Archie Holmes, University of Virginia, ah7sj@virginia.edu
- James Morgan, Charles Stuart University, jmorgan@csu.edu.au

IEEE Computer Society Representatives

- Stephen Frezza, Gannon University, FREZZA001@gannon.edu
- Arnold Pears, Uppsala University, Arnold.Pears@it.uu.se
- Deborah Trytten, University of Oklahoma, dtrytten@ou.edu

IEEE Education Society Representatives

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

Next year's conference will be in Erie, Pennsylvania. We will try a new idea where we will have a co-located Saturday conference for K-12 STEM educators. Please invite your K-12 colleagues!

I hope you have a great conference!



Beth Eschenbach, PhD.
Chair of the Frontiers In Education Steering Committee
Department Chair & Professor
Environmental Resources Engineering
Humboldt State University
Arcata, CA USA

FIE 2015 Planning Committee

General Co-Chairs

Mike DeAntonio
New Mexico State University

Virgilio Gonzalez
University of Texas, El Paso

Assistant to the General Chairs

Kevin Curry
University of Kansas
kgcurry@ku.edu

ASEE/ERM Program Co-Chair

Senay Purzer
Purdue University

IEEE/Computer Society Program Co-Chair

Ari Korhonen
Aalto University

IEEE/Education Society Program Co-Chair

Mani Mina
Iowa State University

Special Sessions and Workshop Chair

Holly Matusovich
Virginia Tech

Exhibits Chair

Robert J. Hofinger
Purdue University

International Co-Chair, Australasia

Mark Lee
Charles Sturt University

International Co-Chair, Europe

Edmundo Tovar
Universidad Politecnica de Madrid

International Co-Chair, South America

Melany M. Ciampi
VP COPEC- Science and Education Research Council
melany@copec.org.br

Conference Historian

Ed Jones
Iowa State University
n2ecj@iastate.edu

Awards Chair

Ed Jones
Iowa State University
n2ecj@iastate.edu

FIE Steering Committee

ASEE Educational Research and Methods Division Representatives

- Beth Eschenbach (Chair)
Humboldt State University
- James Morgan
Charles Stuart University
- Archie Holmes
University of Virginia

IEEE Computer Society

- Stephen Frezza
Gannon University
- Arnold Pears
Uppsala University
- Deborah Trytten
University of Oklahoma

IEEE Education Society

- Russ Meier
Milwaukee School of Engineering
- James Sluss
University of Oklahoma
- Edmundo Tovar
Universidad Politecnica de Madrid

Future FIE Conferences

FIE 2016 Erie, Pennsylvania

FIE 2017 Indianapolis, Indiana

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.

Sponsors

Society Sponsors

The **45th Annual Frontiers in Education Conference** is sponsored by the IEEE Education Society, the IEEE Computer Society, and the ASEE Educational Research and Methods Division.



Academic Host Institutions



A comprehensive land-grant institution of higher learning, **New Mexico State University** is dedicated to teaching, research, and service at the undergraduate and graduate levels. NMSU is a NASA Space Grant College, a Hispanic-serving institution and is home to the very first Honors College in New Mexico. U.S. News and World Report ranks NMSU in the top tier among Best National Universities.



The University of Texas at El Paso (UTEP) was founded in 1914 as the State School of Mines and Metallurgy. Today, UTEP is comprised of seven colleges and offers 71 bachelor's programs, 76 master's programs, 20 doctoral programs and 25 certificate programs. With a student population that exceeds 23,000 and a research portfolio that boasts more than \$83 million in spending, UTEP is on track to become the first national public research university to truly serve the 21st-century student demographic.

Diamond Sponsor



Hewlett-Packard sponsors the ASEE Frederick Emmons Terman Award and the IEEE Harriet B. Rigas Award as well as the luncheon where the awards will be presented.

Sponsors (Continued)

Silver Sponsor



VentureWell sponsors the plenary session the morning of Thursday, October 22, and a complimentary workshop which will focus on stimulating science and technology invention, innovation and entrepreneurship on university and college campuses.

Conference App Sponsor



Markkula Center for Applied Ethics, producer of "**An Introduction to Software Engineering Ethics**" by Shannon Vallor, Associate Professor of Philosophy, Santa Clara University with special contributor Arvind Narayanan, Assistant Professor of Computer Science, Princeton University. This ethics module includes a reading, homework assignments, case studies, and classroom exercises, all designed to spark a conversation about ethical issues that students will face in their lives as software engineers.

FIE 2015 Exhibitors

Exhibit Hall Hours

The exhibits will be open in the Mezzanine Level by the Bathroom from 9:30 AM to 5:00 PM Thursday and from 9:00 AM to 4:30 PM Friday.

EXHIBITOR	WEBSITE
ARM	http://www.arm.com/
Cengage Learning	http://www.cengage.com/
EMA Design Automation	http://www.ema-eda.com/
EPICS	http://www.ema-eda.com/
IonIdea	http://www.ionidea.com/IonEducation.html
JMP Statistical Discovery Software from SAS	http://www.jmp.com/en_us/home.html
MathWorks	http://www.mathworks.com
National Science Foundation	http://nsf.gov
Purdue University Engineering Education	https://engineering.purdue.edu/ENE
Stratasys	http://www.stratasys.com/
Virginia Tech Department of Engineering Education	http://www.enge.vt.edu/
zyBooks	https://zybooks.zyante.com/

Exhibitor Showcase Presentations

Again this year, FIE offers Exhibitor Showcases, which provide our exhibitors a longer block of time for demonstrations or presentations. Additional information about the content of each showcase is in the conference app. Please join us for one of these informative sessions.

Thursday, October 22

11:00 AM - 12:30 PM	Cengage Learning	Juarez B
2:30 PM - 6:00 PM	ARM	Juarez B

Friday, October 23

9:00 AM - 10:30 AM	SAS Institutes, Inc.	Juarez B
11:00 AM - 12:30 PM	IonIdea Inc.	Juarez B
2:30 PM - 4:00 PM	MathWorks	Juarez B
5:00 PM - 6:30 PM	ZyBooks	Juarez B

Special National Science Foundation Presentation

On Thursday, October 22, from 4:30 PM to 6:00 PM in the ballroom, the NSF will hold a special session to discuss funding opportunities to cover ENG/EEC and EHR/DUE programs. Additional information about this presentation is in the conference app.

Meetings at FIE

Wednesday, October 21

5:00 PM -6:30 PM	FIE Steering Committee	Boardroom
------------------	------------------------	-----------

Saturday, October 24

8:00 AM - 10:00 AM	FIE Steering Committee	Boardroom
--------------------	------------------------	-----------

1:00 PM - 3:00 PM	FIE 2015 Planning Committee	Boardroom
-------------------	-----------------------------	-----------

Workshops

Workshop 1A

Wednesday, October 21 1:00 PM - 4:00 PM

Integrating Service-Learning into Engineering and Computing Education

Service learning is a rapidly growing pedagogy in higher education and within engineering, technology and computing. Service-learning provides a learning environment that is very well-matched with ABET. Students can learn strong technical skills while developing teamwork, communication and leaderships skills. The community and human context of service-learning provides rich learning experiences for contemporary social, global and ethical issues. Service-learning also provides the kind of curricular efficiency necessary to meet the attributes called for in the National Academy's Engineer of 2020. Evidence suggests that service-learning also has the potential to increase participation among underrepresented populations within engineering, technology and computing. This interactive workshop will provide an introduction to service-learning and allow participants to explore how it could be integrated into their own courses and curricula. Resources, partnerships and potential barriers will be discussed to provide strategies for successful implementation at the participants' own institutions.

Workshop 1B

Wednesday, October 21 1:00 PM - 4:00 PM

Teaching and Assessment Strategies that Value Innovative Thinking

An increasing number of studies point to the issue that engineering students tend to lose their creative edge during their undergraduate education. In our prior studies, we identified three barriers to innovation experienced by students: an overwhelming technical identity that values technical problem solving over creativity, a view of innovativeness as an attribute that is attainable to just few privileged or masterminds, and instructional constraints that demotivate students from taking risks by exploring novel solutions.

This workshop will focus on teaching and assessing in engineering courses so that students see the essential role of innovative thinking for engineers. Examples of student work will be used to illustrate assessment practices that value creativity and innovative problem solving. The participants will develop rubrics to be used in own courses or design projects.

Workshops (Continued)

Workshop 1C

Wednesday, October 21 1:00 PM - 4:00 PM

Process to Draft the Program Educational Objectives for Undergraduate Engineering Degree Programs

This workshop will engage the participants in the process to draft Program Educational Objectives (PEOs) appropriate for undergraduate engineering degree programs at ABET-accredited institutions of higher education. ABET stipulates in its Self-Study Questionnaire under Criterion 2, Category E that there should be a process in place to periodically review and revise PEOs.

PEOs must reflect the Mission Statement of the institution and serve as a yardstick of student achievement three to five years following graduation. The objectives represent the expectations of the department from its graduates and must be crafted such that measurable objective evidence can be obtained through alumni surveys. To be consistent and effective, the entire engineering department must contribute to the discussion, ratification, and eventual adoption of the PEOs. Active participation by the faculty in defining the PEOs yield clear and concise objectives and promotes ownership of the goals of the Department and ABET process. However, not all faculty members are necessarily familiar with the assessment language and the process to evaluate the PEOs. In order to ensure a meaningful contribution from all faculty members involved in defining the PEOs, this workshop presents a framework that facilitates the discussion and the steps taken to define the PEOs that are (1) adhering to the Mission of the University (2) achieving consistent and measurable expectations.

Workshop 1D

Wednesday, October 21 1:00 PM - 4:00 PM

Agile Way of Educating

The goal of this workshop is to help participants explore how Agile development, a management technique borne out of the software industry, can not only change the way that students engage in project-based and team-based course projects, but the Agile mindset can also transform the way that we educate our students. The Agile Way of Working (or Agile) is a collection of principles and practices that supports rapid and flexible response to change. It does this by promoting communication, collaboration, continuous improvement, and reflection within teams of problem solvers. The approach also fosters self-managed teams. Agile accomplishes this by embracing changing requirements, delivering products frequently, using human-centric methods, and engaging the customer in regular collaboration. Agile puts heavy emphasis on articulating goals, facilitating interactions, improving team dynamics, supporting collaboration, and encouraging experimentation and innovation.

There is an increase in interest in how Agile can be applied in higher education settings - both as a topic of study for project management (i.e., Agile Way of Working) and as a pedagogical mindset (i.e., Agile Way of Educating). In this workshop we will: Provide a tutorial overview of Agile; present examples of how Agile has been used for project management for course projects; present examples of how Agile practices has been applied as a pedagogical approach to derive benefit in the areas of encouraging students to take responsibility for their learning (self-managed learning), continuous improvement through reflection, alternative approaches for evaluation, and increased engagement by learners; and engage in activities that demonstrate Agile in practice in order to provide attendees with ideas for applying Agile. Participants will come away with ideas for applying Agile in their courses and resources for a deeper dive into Agile. Participants will also leave the session with resources that will allow them to perform a deeper dive into Agile.

Workshops (Continued)

Workshop 2A

Wednesday, October 21 5:00 PM - 9:00 PM

Encouraging Information Rich Engineering Design

Students frequently spend too little time understanding the problem in their design projects and jump to solutions without considering alternatives. This leads to inefficient use of time and suboptimal results in the final design. Instead of re-inventing the wheel, students need to explore and understand the work of others applied to similar situations, using strong information gathering, application, and evaluation skills. Ultimately, these reinforce core skills needed for students to be lifelong learners, i.e., determining where they have gaps in knowledge and determining how to fill those gaps efficiently and effectively. This workshop will provide a conceptual model and examples of activities that will help instructors keep students problem-focused, allowing them to generate and weigh alternatives, and ultimately settle on a solution that is most promising to meet their stakeholders' needs. Participants will take away techniques they can apply to their own engineering design courses.

Participants will learn how to determine the needs of stakeholders, better understand the context of the design problem, and make sure they meet professional standards and legal requirements for their designs. In addition to their own brainstorming, they investigate the prior art of others to enlarge the solution space they explore. Evaluating and synthesizing information gathered or generated themselves, they determine the most promising of their proposed solutions.

Workshop 2C

Wednesday, October 21 5:00 PM - 9:00 PM

Agile Teaching and Learning

Educators are converting traditional and project-base courses to agile in response, but this is a daunting task with few structured teaching resources methods available to reduce the burden on the educator. This workshop will present a comprehensive approach to teaching Agile methods that is itself agile, employing a highly iterative, continuous feedback-driven process. This workshop will convey instructional resources to participants, and provide the scaffolding to conduct an agile project course. Participants will receive materials including Eclipse-based open source labs, project scripts, and pedagogical scripts to adapt to their classrooms. Pedagogical and assessment strategies will be shared, and the presenter will facilitate a best practices interactive discussion to draw out lessons learned from workshop participants. The workshop agenda will include strategies and instructions for setting up Scrum, and supporting XP developer practices including Continuous Integration and Testing using Jenkins, Source Code Control using Git, unit testing, static analysis, and more. The workshop will also encourage interaction amongst participants to share best practices and lessons learned. Research directions related to the application of agile principles to teaching and learning will be discussed. Post-workshop support will be provided through a website hosted by the presenter.

A custom Eclipse install with requisite tools will be available for installation during the workshop via USB stick and the Web. The presenter will record and coalesce information gathered from collaborative sessions on the agenda and make the record available to participants on his university website. Instructions for server-based installations and trial accounts will be distributed to participants. **Laptop Required. Tablets will be of only limited utility.**

Workshops (Continued)

Workshop 2D

Wednesday, October 21 5:00 PM - 9:00 PM

How to Select an Area of Scholarship and Address the Applicable Review Criteria to Publish a Paper in the IEEE Transactions on Education

Engineering education publications are expected to make substantive contributions to the field, but there is a need to clarify expectations of substantive contributions across the global community of scholars in this field. For the purposes of the review criteria, contributions will be defined as clear statements of how work described in the manuscript is expected to influence future directions of the field. Many different types of contributions are possible. Review criteria need to be specific to broad areas of potential contributions. Review criteria for the IEEE Transactions on Education are organized based on the three categories of scholarship described by Boyer: discovery, application, and integration. Workshop participants should expect to learn more about the three areas of scholarship and be able to select the area most appropriate for their manuscript.

Plenary Session

Thursday, October 22, 9:00 AM - 10:30 AM

Ballroom

Plenary session sponsored by VentureWell

Building a Teaching Academy at Your University — What a Faculty Member or Administrator Can Do

Members of Frontiers in Education know much about university teaching that could—and should—be shared with educators across our home campuses. It is especially important to share outside of STEM fields where research about education is not as robust. But how to share such information on one's own campus? Enter: the teaching academy.

A teaching academy is a member-driven organization designed to enhance teaching. A teaching academy can serve as a center for teaching or coordinate with an already established center. It need not have even one paid staff or even a budget in the beginning. Activities that are common for teaching academies include having members offer workshops, lead learning communities, induct new members, honor teaching award winners, host celebrations of teaching, as well as observe and give feedback on colleagues' online or face-to-face classes.

In this plenary session, Dr. Gray will address how to begin a teaching academy at your university as well as how to build upon an existing one. She will discuss how even one faculty or administrator can create a groundswell of support, demonstrate the impact of the academy, and raise money as necessary.

Tara Gray, Ph.D., serves as associate professor of criminal justice and as founding director of the New Mexico State University Teaching Academy. The Academy was established in 2003. In the five years before the Academy was founded, while working as an associate professor of criminal justice, Dr. Gray directed two popular short courses, raised the money necessary to support them and bring in a half dozen speakers per year, and began building the faculty and administrative support for a Teaching Academy. Today, the Teaching Academy is a full-service center, working to improve student learning by providing professional development to New Mexico State educators.

Dr. Gray was educated at the United States Naval Academy, Southwestern College in Kansas and Oklahoma State, where she earned her Ph.D. in economics by asking, "Do prisons pay?" She taught economics at Denison University before joining the Department of Criminal Justice at NMSU. Dr. Gray has published three books, including *Publish & Flourish: Become a Prolific Scholar*. She has been honored at New Mexico State and nationally with eight awards for teaching or service.

Dr. Gray has presented faculty development workshops to 8,000 participants in more than a hundred colleges and universities, thirty-five states, and Thailand, Guatemala, Mexico, Canada, Saudi Arabia and the United Arab Emirates. Workshop participants report that she is "spirited, entertaining, and informative—she's anything but gray!™"

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 2015 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 2015. 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 4 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 2015 technical sessions. Below are this year's recipients and the papers they authored or co-authored.

2015 New Faculty Fellows:

Joyce Main

Purdue University

Session T2D: *Using life course theory to frame women and girls' trajectories toward (or away) from computing: Pre high-school through college years*

Session F2F: *Student evaluations of team members: Is there gender bias?*

Session S2C: *The Institutional Environment for Student Veterans in Engineering*

Session S3B: *Examining How International Experiences Promote Global Competency among Engineering Graduate Students*

Session S4E: *Modeling Student Perceived Costs and Benefits to Cooperative Education Programs (Co-ops) and Pathways to Participation*

Noah Salzman

Boise State University

Session S3C: *Effects of Pre-College Engineering Participation on First-Year Engineering Outcomes*

Nathan Canney

Seattle University

Session F3F: *How engineering students define 'Social Responsibility'*

Conference Amenities

Breakfast • Ballroom

Breakfast is included in your conference registration. On Thursday breakfast will include a plenary presentation.

8:00 AM – 10:30 AM Thursday Includes Plenary Session

8:00 AM – 9:00 AM Friday

8:00 AM – 9:00 AM Saturday

Refreshment Breaks • Mezzanine Level

Morning and afternoon breaks will take place daily on the Mezzanine Level, outside the Ballroom.

Lunches • Ballroom

Lunches are included in your conference registration. On Thursday lunch will include the Hewlett-Packard Awards

Frederick Emmons Terman and Harriett B. Rigas Awards Luncheon Sponsored by the Hewlett-Packard Company

12:45 PM – 2:15 PM 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 Harriett B. Rigas Award is presented annually to an outstanding woman engineering educator in recognition of her contributions to the profession.

Luncheon

12:45 PM – 2:15 PM Friday

Includes Plenary Session

Luncheon

12:45 PM – 2:15 PM Saturday

New Faculty Fellows • Exhibit Area • Mezzanine Level

4:00 PM – 5:00 PM 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 Area • Mezzanine Level

4:00 PM – 5:00 PM Friday

Visit the FIE exhibits and check out the latest textbooks, computer software, lab equipment, and other innovations while enjoying refreshments.

Awards Banquet • Ballroom

7:30 PM – 10:00 PM Friday

Thanks to our sponsor, the IEEE Education Society, the Frontiers in Education Conference annual gala networking dinner and awards program is only \$30 per person. An opening reception will be followed by a full-service plated meal. This business formal event is sponsored by the IEEE Education Society - a group of more than 3,000 engineers and academics dedicated to advancing the scholarship and practice of engineering education. You do not have to be an IEEE Education Society member to attend. Tickets can be added to your registration on site.

FIE Registration Conference Desk • Mezzanine Level by the Elevators

Registration will be open during these times:

Wednesday	11:00 AM – 8:00 PM
Thursday	8:00 AM – 6:00 PM
Friday	8:00 AM – 6:00 PM
Saturday	8:00 AM – 5:00 PM

Award Selection Committee Chairs

Frontiers in Education Conference

Benjamin J. Dasher Best Paper Award	Diane Rover
Helen Plants Award	Mats Daniels
Ronald J. Schmitz Award	Cynthia Finelli

ASEE Electrical and Computer Engineering Division

Hewlett-Packard Frederick Emmons Terman Award	Changzhi Li
---	-------------

IEEE Education Society

Awards Policy Committee: Edwin C. Jones, Jr., Chair; Michael Auer; Joanne Bechta Dugan; Lyle Feisel; and Susan Lord.

IEEE William E. Sayle Award for Achievement in Education	Susan Conry
IEEE Transactions on Education Best Paper Award	Jeffrey Froyd and Susan Lord
Chapter Achievement Award	Trond Clausen
Distinguished Chapter Leadership Award	Trond Clausen
Distinguished Member Award	Victor Nelson
Edwin C. Jones, Jr. Meritorious Service Award.....	Susan Lord
Hewlett-Packard/Harriett B. Rigas Award	Joanne Bechta Dugan
Mac Van Valkenburg Early Career Teaching Award.....	Seyed Hosseinn Housavinezhad
Student Leadership Award	Kai Pan Mark



Jeffrey G. Andrews
University of Texas

Past Recipients

'69 Michael Athans
'70 Andrew P. Sage
'71 Joseph W. Goodman
'72 Taylor L. Booth
'73 Sanjit Mitra
'74 Leon Ong Chua
'75 Michael L. Dertouzos
'76 Stephen W. Director
'77 J. Leon Shohet
'78 Ronald A. Rohrer
'79 Martha E. Sloan
'80 V. Thomas Rhyne
'81 Ben Garland
Streetman
'82 Toby Berger
'83 Daniel P. Siewiorek
'84 Mathukumalli
Vidyasagar
'85 Peter S. Maybeck
'86 Lance A. Glasser
'87 Kenneth L. Short
'88 Adel S. Sedra
'89 Frank L. Lewis
'90 Jerry D. Gibson
'91 Barry W. Johnson
'92 H. Vincent Poor
'93 Mark S. Lundstrom
'94 Supriyo Datta
'95 Perinkolam P.
Vaidyanathan
'96 Prithviraj Banerjee
'97 Edward A. Lee
'98 Edwin K. P. Chong
'99 Randy H. Katz
'00 Sergio Verdu
'01 Zoya Popovic
'02 Theodore S.
Rappaport
'03 Wayne Wolf
'04 Keshab K. Parhi

ASEE ECE Division Hewlett-Packard Frederick Emmons Terman Award

*For being the principal author of **Fundamentals of WiMAX**, 449 pages, Prentice-Hall, 2007, a leading textbook in wireless communications, and for research, teaching, and professional service in the discipline of wireless communications.*

Jeffrey G. Andrews (S'98, M'02, SM'06, F'13) received the B.S. in Engineering with High Distinction from Harvey Mudd College, and the M.S. and Ph.D. in Electrical Engineering from Stanford University. He is the Cullen Trust Endowed Professor (#1) of ECE at the University of Texas at Austin and the Editor-in-Chief of the IEEE Transactions on Wireless Communications. He developed Code Division Multiple Access systems at Qualcomm from 1995-97, and has consulted for entities including Apple, Samsung, Verizon, AT&T, the WiMAX Forum, Intel, Microsoft, Clearwire, Sprint, and NASA. He is a member of the Technical Advisory Board of Fastback Networks, and co-author of the books *Fundamentals of WiMAX* (Prentice-Hall, 2007) and *Fundamentals of LTE* (Prentice-Hall, 2010).

Dr. Andrews is an ISI Highly Cited Researcher, received the National Science Foundation CAREER award in 2007 and has been co-author of eleven best paper award recipients including the 2010 IEEE Communications Society Best Tutorial Paper Award, the 2011 IEEE Heinrich Hertz Prize, the 2014 IEEE Stephen O. Rice Prize, and the 2014 IEEE Leonard G. Abraham Prize. He is an IEEE Fellow and an elected member of the Board of Governors of the IEEE Information Theory Society.

About the Terman Award

'05 Ali H. Sayed
'06 Vijay K. Madiseti
'07 Russel Jacob (Jake)
Baker
'08 Keith M. Chugg
'09 David Tse
'10 Bhaskar
Krishnamachari
'11 Tony Givargis
'12 Ali Niknejad
'13 Mung Chiang
'14 Changzhi Li

The Frederick Emmons Terman Award is presented annually to an outstanding young electrical or computer 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 no more 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.



Sarah Rajala
Iowa State University

Past Recipients

'95 Denise D. Denton
'96 Karan L. Watson
'97 Patricia D. Daniels
'98 Delores M. Etter
'99 Sherra E. Kerns
'00 Leah Jamieson
'01 Valerie Taylor
'02 Nan Marie Jokers
'03 Joanne Bechta Dugan
'04 Jennifer L. Welch
'06 Eve A. Riskin
'07 Bonnie Heck Ferri
'08 Cheryl B. Schrader
'09 Cynthia Furse
'10 Mari Ostendorf
'11 Karen Panetta
'12 Tanja Karp
'13 Nancy Amato
'14 Noel Schulz

IEEE Education Society Hewlett-Packard Harriett B. Rigas Award

For exceptional contributions to electrical and computer engineering education and the global engineering community through student and faculty development, transformational and inclusive institutional and professional leadership, and engineering accreditation service.

Sarah Rajala, who has been a pioneer for women in electrical engineering, graduated with a bachelor's degree in the field.

She is currently serving as dean of the Iowa State University College of Engineering and holds the James & Katherine Melsa Professorship in Engineering. Prior to this, Rajala served as the named dean of Mississippi State University's Bagley College of Engineering and head of the Department of Electrical and Computer Engineering. She earned both master's and doctoral degrees from Rice University, taught at North Carolina State University and Purdue University, and served as an adjunct research faculty member at the Wake Forest University Bowman Gray School of Medicine.

Rajala joined the faculty at NC State in 1979, where she was the first female professor in the Department of Electrical and Computer Engineering. Throughout her career at NC State, she served as a center director, Associate Dean for Academic Affairs, and Associate Dean for Research and Graduate Programs.

She is a Fellow of the American Association for the Advancement of Science and the Institute of Electrical and Electronic Engineers; she served as president and is a Fellow of the American Society for Engineering Education. She served as the chair of the Global Engineering Deans Council and is currently Chair of the Engineering Accreditation Council of ABET. A native of Skandia, Michigan, she was only the third woman to graduate from Michigan Tech with an electrical engineering degree.

At Michigan Tech, Rajala is a member of the Presidential Council of Alumnae and the Electrical Engineering Academy and was the first alumna to receive Tech's Outstanding Young Alumni Award (1986). She was recognized again in 2008 with the Distinguished Alumni Award.

About the Rigas Award

The Harriett B. Rigas Award is presented annually to recognize outstanding faculty women who have made significant contributions to electrical and 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 or 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.



Lecia Barker
University of Texas



Jane Gruning
University of Texas

Frontiers in Education Conference Benjamin J. Dasher Best Paper Award

The Student Prompt: Student Feedback and Change in Teaching Practices in Postsecondary Computer Science by Lecia Barker and Jane Gruning FIE 2014, Proceedings pp, 2873-2880

Lecia Barker is an Associate Professor in the School of Information at the University of Texas at Austin and a Senior Research Scientist for the National Center for Women & Information Technology. Lecia conducts research in attracting, retaining, and advancing groups underrepresented in professional computing and science careers; these studies focus on social climate, identity/belonging, faculty adoption of teaching and curricular practices, and sustainable organizational change. She advises several research and implementation projects intended to advance knowledge about computer science education. She is a co-PI of the NCWIT Extension Services program, which provides customized consulting to support systemic reform of computing and engineering departments. Lecia is currently studying faculty adoption of teaching methods in computer science. Lecia holds a Ph.D. in Communication from the University of Colorado at Boulder, a Master of Business Administration from San Diego State University, and a Bachelor of Arts from the University of Iowa.

Jane Gruning is a doctoral student in the School of Information at the University of Texas at Austin. In addition to her research on retaining underrepresented groups in undergraduate computer science programs, Jane conducts research in the area of human-computer interaction investigating the importance of objects in everyday human life and how this differs between physical and digital objects. Her research has focused on various aspects of this subject, from digital objects in causal gaming, to objects on obsolete media in a workplace, to how people share objects in home settings (study conducted during an internship at Microsoft Research Cambridge). She holds an MSIS from the University of Texas at Austin, an MA in Philosophy from Tulane University, and a BA in English Literature from Loyola University in New Orleans.

Past Recipients

'73 Walter D. Story
'74 Richard Hooper
'75 John J. Alan III and
J.J. Lagowski
'76 John Hipwell and
David Blaume
'77 John W. Renner
'78 Albert J. Morris
'79 Donald R. Woods, Cameron
M. Crowe, Terrence W. Hoffman,
and Joseph D. Wright
'80 Marilla D. Svinicki
'81 Martha Montgomery
'82 A.L. Riemenschneider and
Lyle D. Feisel

'83 Davood Tashayyod, Banu
Onaral, and James M. Trosino
'84 Bill V. Koen
'85 Bill V. Koen
'86 Richard S. Culver
'87 David A. Conner, David G.
Green, Thomas C. Jannett, James
R. Jones, M.G. Rekoff, Jr.,
Dennis G. Smith, and Gregg L.
Vaughn
'88 Richard M. Felder
'89 Richard C. Compton and
Robert York
'90 Cindy A. Greenwood
'91 Robert Whelchel
'92 William LeBold and Dan D.
Budny

'93 Daniel M Hull and Arthur H.
Guenther
'94 Burks Oakley II and Roy E.
Roper
'95 Curtis A. Carver, Jr. and
Richard A. Howard
'96 Val D. Hawks
'97 Edwin Kashy, Michael
Thoennessen, Yihjia Tsai, Nancy
E. Davis, and Sheryl L. Wolfe
'98 A.B. Carlson, W.C. Jennings,
and P.M. Schoch
'99 Wayne Burleson, Aura Ganz,
and Ian Harris
'00 David W. Petr
'02 Zeynep Dilli, Neil Goldsman,
Lee Harper, Steven I. Marcus, and
Janet A. Schmidt

Past Recipients (Continued)

- '03 Glenn W. Ellis, Gail E. Scordilis, and Carla M. Cook
- '04 Matthew W. Ohland, Guili Zhang, Brian Thorndyke, and Timothy J. Anderson
- '05 Gregory A. Moses and Michael Litzkow
- '07 Donna Riley and Gina-Louise Sciarra
- '08 Eric Hamilton and Andrew Hurford
- '09 Steve Krause, Robert Culbertson, Michael Oehrtman, Marilyn Carlson, Bill Leonard, C.V. Hollo, and William Gerace
- '10 Glenda Stump, Jenefer Husman, Wen-Ting Chung and Aaron Done
- '11 Jeffrey L. Newcomer
- '12 Kristi J. Shryock, Arun R. Srinivasa and Jeffrey E. Froyd
- '13 Robin Adams, Alice Pawley and Brent Jesiek
- '14 Hansi Keijonen, Jaakko Kurhila, Arto Vihavainen

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.



Rebecca Bates
Minnesota State
University, Mankato



Lisa Benson
Clemson University



Alan Cheville
Bucknell University

Frontiers in Education Conference Helen Plants Award Best Nontraditional Session at FIE 2014

For their Special Session “Agents for STEM Change –Articulating the Goals of Our Community”, Proceedings, 2014 Frontiers in Education Conference, pp. 1942-1943

The EER Leaders NetWorkshop was formed in 2013 through funding from the National Science Foundation (EEC-1314725 and 1314868; Rebecca Bates and Lisa Benson, co-PI’s). Our goal is to provide a mechanism for mentoring and supporting mid-career faculty across distributed locations who are not far enough along in their careers to have administrative or leadership experience, but are frequently stepping into these roles. We seek to develop advocates and future leaders for our emerging discipline of EER by focusing on building community, developing skills to communicate across organizational boundaries and identifying strategies for moving the emerging field forward and supporting rising EER leaders. As a group of about 25 mid-career EER faculty, we have had held face-to-face workshops at and around engineering education conferences. We have also had monthly virtual meetings to learn about ways to influence those outside of our discipline, and ways to navigate important conversations across administrative boundaries within universities. We have learned about sources of influence (such as structural, social and personal), barriers to achieving influence, and change models that are appropriate for engineering education.

Rebecca Bates is a Professor and Chair of the Department of Integrated Engineering at Minnesota State University, Mankato. She directs the Iron Range and Twin Cities Engineering programs, project-based learning programs that provide pathways to four-year engineering degrees for community college graduates. Her research background has focused on speech recognition and understanding as well as engineering and computer science education. Her degrees are in biomedical engineering (B.S., Boston University), electrical engineering (M.S., Boston University, Ph.D., University of Washington) and theological studies (M.T.S., Harvard University).

Lisa Benson is an Associate Professor of Engineering and Science Education at Clemson University, with a joint appointment in Bioengineering. Her research focuses on the interactions between student motivation and their learning experiences. Her projects involve the study of student perceptions, beliefs and attitudes towards becoming engineers and scientists, and their problem solving processes. Other projects in the Benson group include effects of student-centered active learning, self-regulated learning, and incorporating engineering into secondary science and mathematics classrooms. Her education includes a B.S. in Bioengineering from the University of Vermont, and M.S. and Ph.D. in Bioengineering from Clemson University.

Alan Cheville studied optoelectronics and ultrafast optics at Rice University, followed by fourteen years as a faculty member at Oklahoma State University working on terahertz frequencies and engineering education. While at Oklahoma State he developed courses in photonics and engineering design. After serving for two and a half years as a program director in engineering education at the National Science Foundation, he took a chair position in electrical engineering at Bucknell University. He is currently interested in engineering design education, engineering education policy, and the philosophy of engineering education.



Cynthia Finelli
University of Michigan

Frontiers in Education Conference Helen Plants Award Best Nontraditional Session at FIE 2014 (Continued)

Cynthia Finelli is Director of the Center for Research on Learning and Teaching in Engineering and associate professor of electrical engineering at University of Michigan. At U-M, she actively engages in engineering education research, assists other engineering faculty in accomplishing their educational research endeavors, and promotes institutional change through faculty professional development. She currently studies student resistance to active learning, faculty adoption of evidence-based teaching practices, and ethical decision-making in undergraduate engineering students. Dr. Finelli leads an international initiative to create a taxonomy for the field of engineering education research, and she is a Fellow of the American Society for Engineering Education.



Jennifer Karlin
South Dakota School of
Mines and Technology

Jennifer Karlin is a professor of industrial engineering at the South Dakota School of Mines and Technology. She 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. Jennifer studies colleges and universities as organizations and change management to improve learner development and university-based economic development. She 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 also served as an ERM Board Member.



Susan Lord
University of San Diego

Susan M. Lord is Professor and Chair of Electrical Engineering, University of San Diego. She received a B.S. from Cornell University and the M.S. and Ph.D. from Stanford University. Her research focuses on the study and promotion of diversity in engineering including student pathways, diverse populations including Latinos and military veterans, and cross-cultural studies with non U.S. students. Dr. Lord is a Fellow of the IEEE and ASEE and is active in the engineering education community including serving as General Co-Chair of the 2006 Frontiers in Education (FIE) Conference, on the FIE Steering Committee, and as President of the IEEE Education Society for 2009-2010.

Past Recipients

- '80 Helen Plants
- '81 Jim Russell and
John C. Lindenlaub
- '82 Karl A. Smith and
Harold Goldstein
- '83 E. Dendy Sloan and
Charles F. Yokomoto

Past Recipients (Continued)

- '84 David W. Johnson and
Karl A. Smith
- '85 Billy V. Koen
- '86 Martha A. Nord and
Patricia H. Whiting
- '87 John C. Lindenlaub
- '89 Karl A. Smith
- '91 Troy E. Kostek
- '92 Barbara M. Olds and
Ronald L. Miller
- '93 John C. Lindenlaub and
Alisha A. Waller
- '94 Billy V. Koen
- '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
- '13 Lynn Andrea Stein, and
Caitrin Lynch
- '14 Stephanie Cutler, James J.
Pembroke, Matthew
Verleger, Lauren D. Thomas

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).



Robert J. Hofinger

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. Schutz
'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
'13 Jennifer Karlin
'14 Cynthia Finelli

Frontiers in Education Conference Ronald J. Schmitz Award

For contributions to the Frontiers in Education Conference through developing and maintaining a comprehensive program of informative educational exhibits.

Robert J. Hofinger holds the title of Professor Emeritus from the Electrical and Computer Department in the College of Technology at Purdue University. He received his BSEE and MSEE degrees from the Brooklyn Polytechnic Institute (now the NYU Polytechnic School of Engineering).

Before starting his academic career at Purdue University, he worked as an electrical engineer for over 30 years. His experience included work in the military/aerospace industry with LITCOM electronics, a division of LITTON Industries and RCA Astrospace Division where he designed digital circuitry for the decoding and control of hydrogen gas thruster engines on commercial telecommunication satellites; in the gasoline industry with GILBARCO, at the time an EXXON subsidiary, in the design of ultrasound underground metering systems and specialized switching power supplies for gasoline dispensers; in the electric metering industry with LANDIS & GYR, in the design of analog current dividing circuits for accurately measuring the in-phase and quadrature-phase currents for electronic watt-hour metering systems; and the automotive industry with DELCO Electronics (now DELPHI Electronics) in designing Electronic Control Modules (ECMs) for OPEL Motors, a General Motors European subsidiary.

After retirement from full time teaching, he is teaching part time as an Adjunct Professor for the IvyTech Community College of Indiana in the School of Applied Science and Engineering Technology.

He has been active in the American Society for Engineering Education (ASEE) for many years, serving as the program chair for the Instrumentation Division. He was elected to and has held all executive positions in the IL/IN section of the ASEE. He has also held the office of treasurer of the Greensboro, N.C. chapter of the IEEE.

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.

Ron contracted cancer in 1983 and died on July 19, 1984.



Marco Winzker
Bonn-Rhein-Sieg
University

Past Recipients

'79 Lawrence P. Grayson
'80 Demetrius T. Paris
'81 Lindon E. Saline
'82 Anthony B. Giordana
'83 Joseph Bordogna
'84 John C. Lindenlaub
'85 John D. Ryder
'86 James R. Rowland
'87 Bruce Eisenstein
'88 Mac Van Valkenburg
'89 Edward W. Ernst
'90 Ernst Weber
'91 J. David Irwin
'92 Jerrier A. Haddad
'93 Chalmers F. Sechrist
'94 Eric A. Walker
'95 Stephen W. Director
'96 William H. Hayt, Jr.
'97 Jerry R. Yeargan
'98 Ted E. Batchman
'99 Lyle D. Feisel
'00 Irene C. Peden
'01 Donald E. Kirk and
Eli Fromm
'02 Burks Oakley II
'03 Frank Barnes and
Delores Etter
'04 William E. Sayle II
'05 H. Vincent Poor
'06 George D. Peterson
'07 Sarah A. Rajala and
Marwan A. Simaan
'08 James A. Roberts
'09 Jose B. Cruz, Jr.
'10 Rob Reilly
'11 Susan E. Conry
'12 Theodore Rappaport
'13 Karen Panetta
'14 Raghunath K.
Shevgaonkar

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

For continuously introducing project-based learning into the engineering curriculum and promoting professional development of the faculty

Marco Winzker (M'10-SM'11) is Professor for digital design and fundamentals of electric circuits at the Bonn-Rhein-Sieg University in St. Augustin, Germany. He joined the faculty in 2004 and was associate dean of the Engineering department from 2007 to 2011. Since 2011 he has been the project manager for Pro-MINT-us, the university project of the German Teaching Quality Pact initiative ("Qualitätspakt Lehre"). Marco studied Electrical Engineering at the University of Hannover, Germany and received his Ph.D. for work on low-power CMOS design. As Design Engineer and Group Leader he developed image processing systems with ASICs and FPGAs. He worked for Philips Semiconductors (now NXP) in Hamburg, Germany and Eindhoven, The Netherlands, for Liesegang electronics in Hannover, and for Silicon Optix (now IDT) in Hannover and Toronto, Canada.

At the Bonn-Rhein-Sieg University he was the Program Director of the first bachelor curriculum in electrical engineering which introduced a new 4-1-4-1-4-1 semester structure. Three weeks of each semester are reserved for project-based learning and self-learning exercises and these project weeks alternate with four weeks of regular lectures, classroom exercises, and hands-on labs. He successfully applied for funding from the Teaching Quality Pact initiative to extend project-based learning to 1st-year students and to strengthen STEM-subjects in the initial study phase. Marco promotes professional development within the faculty by organizing workshops, "education evenings" where professors dine at a restaurant and discuss an education topic and "teaching days" with talks from university staff and external speakers. In the university canteen he enthusiastically reports from education conferences like Educon and invites colleagues to join him at future events.

Marco was selected as participant for the excellence in education program "Lehre-hoch-n". He received an IEEE Educon Best Paper Award and the award for innovation in teaching at the Bonn-Rhein-Sieg University. He wrote an interdisciplinary textbook about electronics for non-engineers ("Elektronik für Entscheider") for a degree course of technical journalism. He was guest editor of the Austrian journal for higher education development ("Zeitschrift für Hochschulentwicklung") and was invited to speak as well as to chair workshops at several national and international education conferences. He regularly participates in summer schools of his university and has accompanied students to Finland, Spain and The Netherlands. He was also guest lecturer at the National Technical University of Argentina in Buenos Aires.

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

Presented to: Raghu Raman, Krishnashree Achuthan, Prema Nedungadi, Shyam Diwakar, Amrita University, and Ranjan Bose, Indian Institute of Technology New Delhi, for their paper "The VLAB OER Experience: Modeling Potential-Adopter Student Acceptance", IEEE Transactions on Education, 57:4, November 2014, pp. 235-241.

Raghu Raman (M'08, SM '12) received his MBA from Haas School of Business, Berkeley in 2003. He is the Principal Investigator for the National Mission on Education through ICT EdRP Project, Measuring Learning under the HP Catalyst Global Innovation with Carnegie Mellon University and for the Medical Simulation initiative under the Ministry of IT. Currently Raghu is guiding research projects in the areas of learning analytics, serious games and virtual interactive learning environments.

Raghu has over 14 years of product design and architecture experience from NEC Research Labs and IBM and is recipient of the President of India Gold Medal. He is Immediate Past Chair of the IEEE Education Society, India, and recipient of IEEE Outstanding Chapter award for 2013.

Prema Nedungadi (M '12) is the Joint Director of Amrita CREATE (Center of Research in Advanced Technologies for Education) and faculty in School of Engineering. She has coauthored numerous scientific publications. Her research interests are in personalized e-learning solutions using computational intelligence methods, multimodal and virtual reality systems for STEM learning and language learning. She is Principal Investigator for the Online Science Labs and Adaptive Continuous and Comprehensive Evaluation research grants from Govt. of India and Co-Principal Investigator for the Virtual Labs project under National Mission in Education through ICT.

Krishnashree Achuthan holds a Ph.D. in chemical engineering and heads the Center for Virtual and Accessible Laboratories Universalizing Education (VALUE @ Amrita) at Amrita University. VALUE @ Amrita has built over 30 virtual laboratories that are simulation-based, interactive and/or remotely triggerable with over 300 experiments in the areas of Physics, Chemistry, Biotechnology, Computer Science and Mechanical Engineering. She is Principal Institute Coordinator for National Mission on Education through ICT at Amrita University. Her research interests include Science and Engineering under-graduate education amongst others. She has over forty research papers and publications in peer-reviewed conferences and journals. She is also the author of 29 U.S. Patents.

Shyam Diwakar (M '01) received his Ph.D. in computational sciences from the University of Milan, Italy in 2008. Currently, he is an assistant professor at the School of Biotechnology where he is the head of the Computational Neuroscience laboratory. Prior to that he worked as a postdoctoral researcher in the department of General Physiology, University of Pavia, Italy. His research uses principles from electrical engineering and informatics to study the cerebellum and its functioning. Dr. Diwakar is also a member of Indian Academy of Neurosciences, Organization of Computational Neuroscience Societies (OCNS) and the IACSIT.

Ranjan Bose (SM '11) received his B.Tech. degree in electrical engineering from the Indian Institute of Technology (IIT), Kanpur and the M.S. and Ph.D. degrees in electrical engineering from the University of Pennsylvania, Philadelphia. Currently he holds the Microsoft Chair Professorship and heads the Wireless Research Lab in IIT Delhi. His research interests lie in the areas of ultra-wideband (UWB) communications, broadband wireless access and coding theory. He has held guest scientist positions at the Technical University of Darmstadt, Germany, University of Colorado at Boulder, USA and UNIK, Norway. He has published over one hundred research papers in refereed journals and conferences, and holds ten patents.

Past Recipients

'99 J.A. Buck, H. Owen, J.P. Uyemura, C.M. Verber, and D.J. Blumenthal
'00 David J. Russomanno and Ronald D. Bonnell
'01 Christopher W. Trueman
'02 Mohan Krishnan and Mark J. Paulik
'03 Tyson S. Hall, James O. Hamblen, and Kimberly E. Newman
'04 M. Brian Blake
'04 Russell L. Pimmel
'05 Antonio J. Lopez-Martin

'06 Euan Lindsay and Malcolm C. Good
'07 Jason A. Day and James D. Foley
'08 France Bélanger, Tracy L. Lewis, George M. Kasper, Wanda J. Smith and K. Vernard Harrington
'09 Kenneth Ricks, Jeff Jackson, and William A. Stapleton
'10 Keith Holbert and George G. Karady
'11 Julie A. Rursch, Andy Luse, and Doug Jacobson
'12 Susan Lord, Richard Layton, and Matthew Ohland
'13 Benjamin Hazen, Yun Wu and Chetan Sankar
'14 James McLurkin, Joshua B. Rykowski, Meagan John, Quillan Kaseman, and Andrew J Lynch



Rosanna Yuen-Yan Chan
The Chinese University
of Hong Kong

Distinguished Chapter Leadership Award

For her exceptional contribution to the IEEE Education Society and for distinguished leadership in engineering education over a sustained period.

Dr. Rosanna Yuen-Yan Chan is a Senior Member of the IEEE and an Adjunct Assistant Professor at the Department of Information Engineering, The Chinese University of Hong Kong. She has a multidisciplinary background in engineering, education, and learning science. Rosanna is the Founding Chair of the IEEE Education Society Hong Kong Chapter, the Educational Activities Chair of the IEEE Hong Kong Section, and a committee member of the IEEE Educational Activities Board (EAB) Student Educational Resources Committee (SERC) as well as the Chapter Committee of the IEEE Education Society. Rosanna is elected the New Faculty Fellow of the Center for the Advancement of Scholarship on Engineering Education (CASEE), National Academy of Engineering (NAE), USA.



Victor P. Nelson
Auburn University

Past Recipients

'78 Warren B. Boast
'79 Joseph M. Biedenbach
'80 Edwin C. Jones, Jr.
'81 Lyle D. Feisel
'82 Roy H. Mattson
'83 Robert F. Fontana
'84 Gerald R. Peterson
'85 Luke H. Noggle
'86 James A. Mulligan
 Sidney S. Shamis
'87 Thomas K. Gaylord
'88 Robert F. Cotellessa
'89 E. Ben Peterson
'90 Darrell L. Vines
'91 Victor K. Schutz
'92 William K. LeBold
'93 Frank S. Barnes
'94 Patricia D. Daniels
'95 Robert W. Ritchie
'96 Marion O. Hagler
 Donald E. Kirk
'97 Robert Sullivan
'98 Burks Oakley II
'99 Gerald L. Engel
'00 Ted E. Batchman
'01 William E. Sayle II
'02 James Rowland
'03 David A. Conner
'04 Trond Clausen
'05 J. David Irwin
 Rodney J. Soukup
'06 Robert A. Reilly
'07 David V. Kerns, Jr.
'08 James J. Sluss, Jr.
'09 Manuel Castro
'10 Michael E. Auer
'11 Russ Meier
'11 Claudio da Rocha Brito and
 Melany M. Ciampi
'12 Susan Lord
'13 Charles Fleddermann
'14 Danilo G. Zutin

IEEE Education Society Edwin C. Jones, Jr. Meritorious Service Award

For service to the Education Society through maintenance, improvement, and implementation of the by-laws and related activities, for overall service to the society, and for service to all of IEEE, ABET, and ASEE.

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 (CE20014) report on model computer engineering curricula, and is a member of the task force updating that report for CE2016. 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.

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. 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, 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; and the Grinter Distinguished Service Award from ABET in 2001. Some of his students founded a scholarship for Electrical and Computer Engineering students at Iowa State University in his honor.



Chengying Xu
Florida State University

Past Recipients

- '04 Parham Aarabi
- '05 John R. Buck
- '06 Lisa G. Huettel
- '07 Susan C. Hagness
- '08 Kathleen E. Wage
- '09 Min Wu
- '10 Craig Ziles
- '11 Jonathan Makela
- '12 Babak Ayazifar
- '13 Muhammad Zaman
- '14 Jill Nelson

IEEE Education Society Mac Van Valkenburg Early Career Teaching Award

For leadership in engineering education innovation and outstanding classroom teaching, providing students hands-on experience during classes and research, and helping them understand fundamentals using practical examples.

Dr. Chengying “Cheryl” Xu is currently an Associate Professor at the Florida State University, Tallahassee, Florida. She received her Ph.D. in 2006 in mechanical engineering from Purdue University, West Lafayette, Indiana, and her M.S. in 2001 in mechanical manufacturing and automation from Beijing University of Aeronautics and Astronautics, Beijing, China.

Her research interests include manufacturing of advanced materials, manufacturing process optimization and control, high temperature sensor design. Dr. Xu has co-authored a textbook with her doctoral advisor: *Intelligent Systems: Modeling, Optimization and Control* (CRC Press, 2008, 433 pages), and four book chapters. She has authored and coauthored more than 30 journal papers and around 30 refereed conference proceedings.

Dr. Xu is the Journal Guest Editor for *ASME Transactions, Journal of Micro- and Nano- Manufacturing (ASME JNM)*, an Associate Editor of the *International Journal of Nanomanufacturing (IJNM)* from 2008 to 2010, and has been on the Board of Editors for *Journal of Aviation and Aerospace Perspectives (JAAP)* since 2010, and *International Journal of Computational Materials Science and Surface Engineering* since 2007. She served on the Conference Organizing Committee for *ASME Dynamic Systems and Control Conference (DSCC)*, *International Symposium on Flexible Automation (ISFA)*, *SPIE Conference, Smart Structures/NDE, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*. She won the Office of Naval Research Young Investigator Award and Society of Manufacturing Engineers’ (SME) Richard L. Kegg Outstanding Young Manufacturing Engineer (OYME) Award in 2011.

She is actively in conducting research in manufacturing field and has attracted an impressively high level of research funding (total > \$4M, where her share > \$2.8M). She has secured significant support from National Science Foundation (NSF), Department of Energy (DoE), Office of Naval Research (ONR), Florida State, international/national companies, and her university to conduct research. She has graduated five Ph.D. and nine M.S. students.



Jeffrey Froyd
Texas A&M University

Past Recipients

'05 Marion O. Hagler and
Burks Oakley II
'06 Ted Batchman and
David A. Conner
'08 David L. Soldan
'10 Manuel Castro
'11 Susan M. Lord
'12 Matthew Ohland
'13 Victor Nelson

IEEE Education Society Distinguished Member Award

For leadership in promoting innovation in STEM education, including service as project director for the Foundation Coalition, service as an ABET program evaluator, and service to the IEEE Education Society as Editor-In-Chief of the IEEE Transactions on Education and past-chair of the Frontiers in Education Conference.

Dr. Jeffrey E. Froyd is a TEES Research Professor in the Office of Engineering Academic and Student Affairs at Texas A&M University, College Station. He received the B.S. degree in mathematics from Rose-Hulman Institute of Technology and the M.S. and Ph.D. degrees in electrical engineering from the University of Minnesota, Minneapolis. He was an Assistant Professor, Associate Professor, and Professor of Electrical and Computer Engineering at Rose-Hulman Institute of Technology. At Rose-Hulman, he co-created the Integrated, First-Year Curriculum in Science, Engineering and Mathematics, which was recognized in 1997 with a Hesburgh Award Certificate of Excellence. He served as Project Director for a National Science Foundation (NSF) Engineering Education Coalition in which six institutions systematically renewed, assessed, and institutionalized innovative, integrated undergraduate engineering curricula.

He has authored over 70 journal articles and conference papers and offered over 30 workshops on faculty development, curricular change processes, curriculum redesign, and assessment. He has served as a program co-chair for three Frontiers in Education Conferences and the general chair for the 2009 conference. He also serves on the IEEE Curricula and Pedagogy Committee, which is part of the University Resources Committee, which is part of the Educational Activities Board. Prof. Froyd is a Fellow of the IEEE, a Fellow of the American Society for Engineering Education (ASEE), an ABET Program Evaluator, the Editor-in-Chief for the *IEEE Transactions on Education*, a Senior Associate Editor for the *Journal of Engineering Education*, and an Associate Editor for the *International Journal of STEM Education*.



German Carro Fernandez

Past Recipients

- '09 Seiji Isotani
- '10 Emmanuel Gonzalez and
Kai-Pan Mark
- '11 Dario Schor
- '12 Elio San Cristobal Ruiz
and Sergio Martin
- '13 Subhamoy Mandal
- '14 Liang-Bi Chen

IEEE Education Society Student Leadership Award

For Student Branch leadership advocating and facilitating the activities of the UNED Student Branch and collaborations in Spain and Portugal to sustain IEEE Students Branches.

German Carro Fernandez is Doctor, Cum Laude, in Industrial Engineering (UNED, 2014), Master in Research on Electronics, Electricity and Industrial Control (UNED, 2012), Bachelor degree on Computer Systems Engineering Tech. (UNED, 2010), Master on Business Administration and Taxes (UDC and Spanish Public Tax School, Spanish Treasury, 1997) and Bachelor degree on Economics Science and Financial Markets (UDC, 1996). He is on the Board of Directors of Pre-University Activities Sub-Committee of EASC Region 8, was Treasurer of IEEE Spain Section, Chair of Spain Section AG GOLD/YP, Chair of IEEEsb of UNED, Chair of Student Chapter of IEEE Education Society on IEEEsb of UNED, and Member of several IEEE Societies.

He has worked as a freelance economist and engineering consultant for industries and enterprises since 1994. Since 2012 he is working as Professor and Researcher on several projects with main focus on Remote Laboratories, Telematics Control, Robotics and IoT, at UNED, and since 2015 he is Director of the UNED Associate Center on A Coruña (Spain). Since 2006 he has been working as volunteer at IEEE to spread technology on several education areas and promoting the engineering and science on Schools, Universities and Academia receiving several appreciation certificates like "Certificate of Appreciation from IEEE", 2010/2011, and "Certificate of appreciation from IEEE Spain Section", 2012/2013.

IEEE Fellow Award

Susan M. Lord, University of San Diego

For professional leadership and contributions to engineering education



Susan M. Lord is Professor and Chair of Electrical Engineering, University of San Diego (USD). She received a B.S. from Cornell University and the M.S. and Ph.D. from Stanford University. Her research focuses on the study and promotion of diversity in engineering including student pathways, diverse populations including Latinos and military veterans, and cross-cultural studies with non U.S. students. Her research has been sponsored by the National Science Foundation (NSF). Dr. Lord and Dr. Michelle Madsen Camacho are among the first to study Latinos in engineering. In reviewing their 2013 book, *The Borderlands of Education: Latinas in Engineering*, Dr. Riley, Smith College, called it “groundbreaking work...that will challenge your assumptions about women and minorities in engineering”. Dr. Walden, University of Oklahoma said “This book should be high on the must-read list for engineering educators at all levels, from first-year faculty to deans.” Dr. Lord is a Fellow of the IEEE and ASEE and is active in the engineering education community including serving as General Co-Chair of the 2006 Frontiers in Education (FIE) Conference, on the FIE Steering Committee, and as President of the IEEE Education Society for 2009-2010. She is an Associate Editor of the *IEEE Transactions on Education*. She and coauthors received the 2011 Wickenden Award for the best paper in the *Journal of Engineering Education* and the 2011 Best Paper Award for the *IEEE Transactions on Education*. Dr. Lord spent a sabbatical in 2012 at Southeast University in Nanjing, China teaching and doing research. Dr. Lord is currently on the USD team implementing “Developing Changemaking Engineers”, an NSF-sponsored Revolutionizing Engineering Education (RED) project.

IEEE Fellow Award

Mark H. Weichold, Texas A&M University, Qatar

For contributions to international development of engineering education



Dr. Mark H. Weichold is an electrical engineer and has worked for General Dynamics Ft. Worth Division, Motorola in Austin, TX and the U.S. Army Electronic Technology and Devices Laboratory in Ft. Monmouth, NJ. He joined the Electrical Engineering faculty at Texas A&M University in 1982 and now holds the title of Professor. His research interests include electron device fabrication process development, device design and characterization. He has authored more than 80 journal articles, conference papers and scientific reports and holds three US patents. At the University's main campus, he served as the Dean of Undergraduate Programs and Associate Provost for Academic Services. In 2009, he was recognized as a Regents Professor his outstanding work and exemplary contribution to Texas A&M University. In 2013, he was awarded the Abdullah bin Hamad Al Attiyah International Energy Award for 'Lifetime Achievement for the Advancement of Education'.

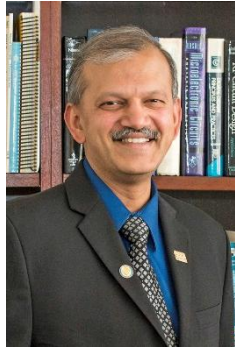
He is a Fellow of the IEEE, a member of the American Physical Society, and a registered professional engineer in the State of Texas.

In January 2007, Weichold became Dean and CEO of Texas A&M University at Qatar. Since its inception, Texas A&M at Qatar has grown to more than 500 currently enrolled students, including 50 graduate students and over 80 faculty members. Of the more than 500 graduates, nearly half are Qatari nationals and 40% are female. Texas A&M at Qatar is also home to a dynamic research program with more than \$160 million in cumulative funding that supports responsive research projects closely aligned with the goals of Qatar National Vision 2030.

IEEE Fellow Award

Sundaram Ramesh, California State University, Northridge

For contributions to entrepreneurship in engineering education



Dr. Sundaram Ramesh has been serving as the Dean of the College of Engineering and Computer Science at California State University, Northridge since 2006. Prior to joining CSUN he was Professor of Electrical and Electronic Engineering at California State University, Sacramento, where he was the Department Chair from 1994 to 2006. His efforts and leadership have created jobs and enhanced the growth of high technology industries through the Center for Entrepreneurship and Innovation and Energy Research Center at CSU Northridge. Examples include a Satellite Clean Tech Incubator, a Master's Degree in Assistive Technology Engineering – whose graduates help design and create products to serve persons with disabilities; and as the PI of the nationally acclaimed five year AIMS² (www.ecs.csun.edu/aims2) program to graduate underrepresented minorities in engineering and computer science with a \$5.5 Million grant from the US Department of Education.

In 2014 Ramesh was invited by the White House Office of Science and Technology Policy (OSTP) to host one of the four national White House STEM workshops at CSU Northridge to broaden participation of minorities in the STEM disciplines, remove barriers, and improve student graduation rates- especially in engineering and computer science. Ramesh serves on several Boards including IEEE EAB, the IEEE-HKN Board of Governors, and ABET Board of Directors. He has served ABET as a program evaluator representing IEEE. He is the IEEE-HKN President-Elect for 2015-16, and chairs the 2015 IEEE EAB Pre-University Coordinating Committee leading signature programs such as TISP (Teacher in Service program) and EPICS (Engineering Projects in Community Service) in IEEE. Dr. Ramesh's professional interests are in Fiber Optic Communications and he received the BE (Honors) degree from the University of Madras, India, in 1981, and the MSEE and PhD degrees from Southern Illinois University, Carbondale, in 1983 and 1986 respectively. For additional information please visit <http://www.csun.edu/engineering-computer-science/ramesh>.

Reviewers

This year, FIE 2015 had over 700 papers and presentations submitted for consideration. The FIE 2015 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 FIE 2015. Their outstanding effort has helped maintain the high standard that has become the reputation of each FIE conference.

Name	Institution
Haqiq Abdelkrim	Hassan University
Otávio Acosta	Federal University of Rio Grande do Sul
Gina Adam	University of California at Santa Barbara
Olusola Adesope	Washington State University
Juan Aguilar-Peña	Universidad de Jaén
Benjamin Ahn	Massachusetts Institute of Technology
Nancy Alajarmeh	New Mexico State University
Carlos Alario Hoyos	Universidad Carlos III de Madrid
Sadot Alexandres	Universidad Pontificia Comillas
Ahmad Al-Jarrah	New Mexico State University
Nuha Alkabour	University of Michigan-Flint
Vicki Allan	Utah State University
Colin Allison	University of St Andrews
Mahmoud Al-Qutayri	Khalifa University
Nesreen Alsbou	Ohio Northern University
Ainhoa Álvarez	University of the Basque Country, UPV/EHU
Rafael Alvarez-Horine	San Jose State University
Luis Alves	Polytechnic Institute of Bragança
Luis Amaral	University of Minho
Toni Amorim	Universidade Estadual do Mato Grosso
Paul Anderson	College of Charleston
Paulo André	Instituto Superior Técnico, Universidade de Lisboa
Boon Chong Ang	EASIC
Nada Anid	New York Institute of Technology
Whitney Anthony	Texas A&M University
Eduardo Aranha	Federal University of Rio Grande do Norte (UFRN)
Eliane Araujo	Federal University of Campina Grande
Maurício Arimoto	University of São Paulo
Sanjeev Arora	Fort Valley State University
Omar Ashour	Penn State Erie
Michael Auer	Carinthia Tech Institute
Asad Azemi	Pennsylvania State University
Patricia Backer	San Jose State University
Abdel-Hameed Badawy	Arkansas Tech University
Nilufar Baghaei	Unitec Institute of Technology
Margaret Bailey	Rochester Institute of Technology

Ellen Barbosa	University of São Paulo
Edurne Barrenechea	Universidad Pública de Navarra
Victor Barros	Science and Education Research Council
Mohammed Basher	King Abdulaziz University
Milton Joel Batres Márquez	Universidad Tecnológica de Chihuahua
Eric Baumgartner	Ohio Northern University
Kemal Bayrakceken	Turkish Air Force Academy
Mark Bedillion	South Dakota School of Mines and Technology
Luiz Begosso	Fundacao Educacional do Municipio de Assis
Avril Behan	Dublin Institute of Technology
Lluís Belanche Muñoz	Universitat Politècnica de Catalunya
Scott Bell	Kansas State University
José Benlloch-Dualde	Universitat Politècnica de València
Bridget Benson	Cal Poly, San Luis Obispo
Lisa Benson	Clemson University
Edward Berger	Purdue University
Luciana Berreta	Federal University of Goiás
Angela Bielefeldt	University of Colorado Boulder
Anna Bilyatdinova	University ITMO
Roberto Bittencourt	State University of Feira de Santana
Sara Blanc	Universitat Politècnica de València
Manuel Blazquez	Universidad Antonio de Nebrija
Brit-Maren Block	Leuphana University of Lüneburg
Klavdiya Bochenina	University ITMO
Diane Bondehagen	Florida Gulf Coast University
Jennifer Bonniwell	Marquette University
Vanessa Borges	University of São Paulo
Silvia Botelho	Federal University of Rio Grande
Jesus Boticario	Universidad Nacional de Educación a Distancia
Ivica Botički	University of Zagreb
Brian Bowe	Dublin Institute of Technology
Marija Božić	Autonomous University of Barcelona
Jacques Brancher	Universidade Estadual de Londrina
Kalinka Branco	USP - University of São Paulo
Anarosa Brandão	Universidade de São Paulo
Leônidas Brandão	University of São Paulo
Henry Braun	Arizona State University
Rex Bringula	University of the East
Claudio Brito	Science and Education Research Council
Natalia Andrea Bueno Pizarro	Universidad EAFIT
Kevin Burger	Arizona State University
John Burkhardt	US Naval Academy
Jake Byrne	Trinity College Dublin
Elizabeth Cady	National Academy of Engineering

Manuel Caeiro	University of Vigo
Carlos Caicedo Bastidas	Syracuse University
María del Carmen Calatrava Moreno	Vienna University of Technology
Agustin Caminero	The National University of Distance Education
Nathan Canney	Seattle University
Juan-Carlos Cano	Universidad Politecnica de Valencia
Mary Capraro	Texas A&M University
César Cárdenas	Tecnológico de Monterrey - Campus Querétaro
Guilherme Cardim	University of São Paulo State
Dale Carnegie	Victoria University of Wellington
Luís Carriço	University of Lisbon
German Carro Fernandez	UNED - Spanish University for Distance Education
Fabricio Carvalho	Federal University of Paraíba - UFPB
Jose Reginaldo Carvalho	Federal University of Amazonas
Thais Castro	UFAM
Alberto Castro	UFAM - Federal University of Amazonas
Manuel Castro	Spanish University for Distance Education - UNED
James Cawthorne	Purdue University
Ofelia Cervantes Villagomez	Universidad de las Americas Puebla
Mario Chacon	Costa Rica Institute of Technology
Shun-Chih Chang	National Dong Hwa University
Norberto Charczuk	National University of Lanus
Dmitriy Chebanov	LaGuardia Community College of CUNY
Helen Chen	Stan
Wei-Fan Chen	Penn State University
Ye Cheng	MathWorks
R Cheville	Bucknell University
Janneth Chicaiza	Universidad Técnica Particular de Loja
Ken Christensen	University of South Florida
Ivan Claros	Universidad Autónoma de Madrid
José Alberto Cocota	Federal University of Ouro Preto (UFOP)
Maxine Cohen	Nova Southeastern University
Miguel Conde	University of León
Ricardo Cordoba	Speech Technology Group
Evandro Costa	UFAL-Universidade Federal de Alagoas
Lucineia Costa	Universidade Federal do Espírito Santo
Robert Craig	PETROLEUM INSTITUTE
DeLois Crawford	Rochester Institute of Technology
Raquel Crespo	Universidad Carlos III de Madrid
Paul Crilly	United States Coast Guard Academy
Juan Cruz-Benito	University of Salamanca
Jun Cui	Southeast University
Antonette Cummings	Purdue
Davidson Cury	UFES- Universidade Federal do Espírito Santo

I Dabipi	University of Maryland Eastern Shore
Theopisti Dafni	University of Zaragoza
Danilo Dalmon	University of São Paulo
Fábio Damasceno	Universidade Federal do Rio Grande do Sul
Mats Daniels	Uppsala University
Juan Pablo de Castro Fernández	University of Valladolid
Maria De Marsico	Sapienza University di Roma
Rafael de Souza	Federal University of Sao Carlos
Eti de Vries	Hanze UAS
Michael DeAntonio	New Mexico State University
Debzani Deb	Winston-Salem State University
Angel Delgado	University of Alicante
Kimberley DeLong	Massachusetts Institute of Technology
Matt DeMonbrun	University of Michigan
Luis Fernando D'Haro	Technical University of Madrid
Gabriel Díaz	Universidad Nacional de Educación a Distancia - UNED
Leda Digión	National University Investigator and Teacher
Reginaldo do Prado	University of São Paulo
Peggy Doerschuk	Lamar University
Susan Donohue	University of Virginia
Jineet Doshi	IIT Bombay
Anna Douglas	Purdue University
Spyros Doukakis	The American College of Greece – Pierce
Christos Douligeris	University of Piraeus
Adam Doupe	Arizona State University
Alexey Dukhanov	ITMO University
John Dyer	University of Oklahoma
Mauricio Dziedzic	Universidade Positivo
Leovy Echeverria	Universidad Pontificia Bolivariana Montería
Marius Ellingsen	South Dakota School of Mines and Technology
Michael Elmore	Binghamton University
Daniel Epstein	Federal University of Rio Grande do Sul - UFRGS
Elizabeth Eschenbach	Humboldt State University
Alberto Esquinca	University of Texas at El Paso
M. Rosa Estela	Universitat Politècnica de Catalunya
Iria Estevez-Ayres	Universidad Carlos III de Madrid
Odiel Estrada Molina	University of Informatics Science
Jeffrey Evans	Purdue University
Courtney Faber	Clemson University
Ramón Fabregat Gesa	Universitat de Girona
Fabian Fagerholm	University of Helsinki
Francisco Falcone	Universidad Publica de Navarra
Venilton FalvoJr	University of Sao Paulo
K.-Y. Daisy Fan	Cornell University

Tulio Faria	University of São Paulo
Aracele Fassbinder	Federal Institute of Sul de Minas Gerais
Fernando Fernández-Martínez	Dpto. de Teoría de la Señal y Comunicaciones
Carmen Fernandez-Panadero	Universidad Carlos III de Madrid
Deller Ferreira	Federal University of Goias
Maria Joao Ferreira	Universidade Portucalense
Begoña Ferrero	University of the Basque Country
Carla Fidalgo	ISEC/IPC
Eduardo Figueiredo	Federal University of Minas Gerais (UFMG)
Jorge Figueiredo	Universidade Federal de Campina Grande
Pablo Figueroa	Universidad de los Andes
Elena Fitkov-Norris	Kingston University
Shayne Flint	The Australian National University
D. Jake Follmer	The Pennsylvania State University
Paula Fonseca	Queen Mary University of London
David Fonseca	Enginyeria Arquitectura La Salle (Universitat Ramon Llull)
Mark Fontenot	Southern Methodist University
Jordi Fortuny-Santos	Universitat Politècnica de Catalunya
Michael Fosmire	Purdue University
Henrique Freitas	Pontifícia Universidade Católica de Minas Gerais
Eric Freudenthal	University of Texas at El Paso
Stephen Frezza	Gannon University
Wilhelm Friess	University of Maine
Jeff Frolik	University of Vermont
Jeffrey Froyd	Texas A&M University
Mohammad Fuad	Winston-Salem State University
Steven Fulton	US Department of Defense
Bruno Gadelha	Federal University of Amazonas
Eva Garcia	University of Alcalá
Rogério Garcia	São Paulo State University
Vinicius Garcia	Federal University of Pernambuco
Antonio Garcia	University of Alcalá
J. Jesús García Domínguez	University of Alcalá
Felix Garcia Loro	Spanish University for Distance Education (UNED)
Lina García-Cabrera	University of Jaén
Francisco García-Peñalvo	University of Salamanca
Anchal Garg	Amity University
Uma Garimella	Nalla Malla Reddy Engineering College
Cesar Garita	Costa Rica Institute of Technology
Piedad Garrido	University of Zaragoza
Kevin Gary	Arizona State University
Gheorghita Ghinea	Brunel University
Krishnendu Ghosh	Miami University
Koenraad Gieskes	Binghamton University

Inés Gil-Jaurena	Spanish University for Distance Education - UNED
Domingo Gimenez	University of Murcia
Cecilia Gimeno	University of Zaragoza
Kyle Gipson	James Madison University
Anabela Gomes	Polytechnic Institute of Coimbra
Javier Gomez	Universidad Autónoma de Madrid
Andrea Goncher	Queensland University of Technology
Alexandra González	University of Alcala
Juan Carlos Gonzalez de Sande	Universidad Politécnica de Madrid
Gordon Goodman	Rochester Institute of Technology
Wade Goodridge	Utah State University
Aldo Gordillo	Universidad Politécnica de Madrid
Ann Gordon-Ross	University of Florida
Laura Grabowski	University of Texas-Pan American
Ximo Granell	Universitat Jaume I
Antoni Grau	Technical Univ of Catalonia
Olaf Hallan Graven	Buskerud and Vestfold University College
Mary Jo Grdina	Drexel University
Dai Griffiths	Bolton University
Michael Gross	Bucknell University
Mariluz Guenaga	Deusto Institute of Technology - DeustoTech, University of Deusto
Minzhe Guo	University of Cincinnati
Neeraj Gupta	UPTU Lucknow
Shohreh Hadian	Camosun College
Bashar Hammad	The Hashemite University
Laura Hanlan	Worcester Polytechnic Institute
Trevor Harding	California Polytechnic - SLO
David Harding	University of New Haven
Firas Hassan	Ohio Northern University
Pablo Haya	Universidad Autonoma of Madrid
Fredrik Heintz	Linköping University
Jose Ramon Hilera	University of Alcala
Jonathan Hilpert	Georgia Southern University
Margret Hjalmarson	George Mason University
Margaret Hobson	Texas Engineering Experiment Station--Texas A&M System
Kirsten Hochstedt	Penn State University
Archie Holmes	University of Virginia
Melinda Holtzman	Portland State University
Liang Hong	Tennessee State University
Christopher Hovey	The University of Texas at Austin
Shaobo Huang	South Dakota School of Mines and Technology
Shihong Huang	Florida Atlantic University
Yifan Huang	Beijing Institute of Technology
Lisa Huettel	Duke University

Meriel Huggard	Trinity College Dublin
Thorna Humphries	Norfolk State University
Jenefer Husman	ASU
María-Blanca Ibáñez	Universidad Carlos III de Madrid
Hairuzila Idrus	Universiti Teknologi PETRONAS
Vasiliki Ikonomidou	George Mason University
Hudson Jackson	United States Coast Guard Academy
Ashis Jalote-Parmar	Indian Institute of Management, Ahmedabad
Eric James	Huron Consulting Group
Peter Jamieson	Miami University
Daniela Janssen	IMA/ZLW & IfU RWTH Aachen University
Dhammika Jayalath	Queensland University of Technology
Indumathy Jayamani	Michigan State University
Sabina Jeschke	RWTH Aachen University
Brent Jesiek	Purdue University
Isabel Jesus	Institute of Engineering of Porto - ISEP
Elva Jones	Winston-Salem State University
Karl Jones	Liverpool John Moores University
Shawn Jordan	Arizona State University
Anthony Joseph	Pace University
Ann Kaiser	La Salle Academy
Chinami Kaneshiro	Okinawa National College of Technology
Jennifer Karlin	South Dakota School of Mines and Technology
Jamie Kennedy	Drexel University
Megan Kenny Feister	Purdue University
Howard Kimmel	New Jersey Institute of Technology
Adam Kirn	University of Nevada, Reno
Alexander Kist	University of Southern Queensland
Kathleen Kitto	Western Washington University
David Klotzkin	Binghamton University
Vitaly Klyuev	The University of Aizu
Yi Kong	Purdue University
Ari Korhonen	Aalto University School of Science
Daniel Krutz	Rochester Institute Of Technology
Sami Kujala	Aalto University School of Electrical Engineering
Amruth Kumar	Ramapo College of New Jersey
Varun Kumar	Tata Research Development and Design Centre
Viraj Kumar	PES University
Rangith Kuriakose	University of Technology
Gerard Lachiver	Universite de Sherbrooke
Manuel Lama	Universidade de Santiago de Compostela
Micah Lande	Arizona State University
Dieter Landes	Coburg University of Applied Sciences and Arts
Mikel Larrañaga	University of the Basque Country, UPV/EHU

Eric Larson	Seattle University
Claire Lassudrie	Telecom Bretagne
Marcia Laugerman	Iowa State University
Wendy LawrenceFowler	The University of Texas-Pan American
Alistair Lawson	Edinburgh Napier University
Khuan Lee	Universiti Teknologi MARA
Young Lee	Texas A&M University-Kingsville
Kenneth Leitch	West Texas A&M University
Elizabeth Lennon	Manhattan College
Michael Leverington	University of Nevada, Reno
Xiaosong Li	Unitec Institute of Technology
Ying Li	Beijing University of Aeronautics and Astronautics
Xiang Lian	University of Texas Rio Grande Valley
Ying Liang	University of the West of Scotland
Pengtao Lin	Old Dominion University
Euan Lindsay	Charles Sturt University
Julie Linsey	Georgia Institute of Technology
Martín Llamas-Nistal	University of Vigo
Marisa Llorens	Dublin Institute of Technology
Jorge López Benito	CreativITIC Innova SL
Antonio López-Martín	Public University of Navarra
Jorge Lopez-Vargas	UTPL
David Lowe	The University of Sydney
Vicente Lucena	University of Amazonas
Anne Lucietto	Purdue University
Leandro Luque	Sao Paulo State Technological College
José Magalhães	Federal University of Amazonas
Elizabeth Maia	Federal University of Minas Gerais
Joyce Main	Purdue University
Mitsunori Makino	Chuo University
Manish Malik	University of Portsmouth
Natasha Mamaril	University of Illinois
Aleardo Manacero	São Paulo State University - UNESP
Murali Mani	University of Michigan Flint
Theodore Manikas	Southern Methodist University
Vincent Manno	Franklin W. Olin College of Engineering
Rachid Manseur	SUNY Oswego
Mario Manso Vazquez	University of Vigo
Ashutosh Marathe	University of Pune
Maria Marcelino	University of Coimbra
Maria Jesús Marco-Galindo	Universitat Oberta de Catalunya
Bertil Marques	Instituto Superior de Engenharia do Porto
Maíra Marques Samary	Universidad de Chile
Norian Marranghello	São Paulo State University - UNESP

John Marsh	University of Glasgow
Itziar Martija	University of the Basque Country
Carme Martin	Universitat Politecnica de Catalunya - BarcelonaTech
Jose Luis Martin	Instituto de Ciencias de la Educación Universidad Politécnica de Madrid
Sergio Martin	Spanish University for Distance Education - UNED
Francisco Martinez	University of Zaragoza
Pilar Martínez García	Universidad Politécnica de Madrid
Jorge Martin-Gutierrez	Univeridad de La Laguna
Scheila Martins	University of Coimbra
Luis Mata	Lawrence Technological University
Cheryl Matherly	University of Tulsa
John Mativo	University Of Georgia
Holly Matusovich	Virginia Tech
Ciaran Mc Goldrick	Trinity College Dublin
Tom McEwan	Edinburgh Napier University
Jacqueline McNeil	Purdue University
Debbie Meharg	Edinburgh Napier University
Glaucia Mello	Pontifical Catholic University of Minas Gerais
Iratxe Menchaca	University of Deusto
António Mendes	University of Coimbra
Andrea Mendonça	Federal Institute of Education, Science & Technology of Amazonas (IFAM)
John Mendoza-Garcia	Purdue University / Pontificia Universidad Javeriana
Andrew Meneely	Rochester Institute of Technology
Jessica Menold	Penn State University
Rodany Merida	University of the East
Georgette Michko	University of Houston
Arturo Miguel-de-Priego	None
Lee Miller	University of Nebraska-Lincoln
Matthew Miller	Clemson University
Steven Miller	IBM
Mani Mina	Iowa State University
Tsunenori Mine	Kyushu University
Angela Minichiello	Utah State University
Joe Miró	Universitat de les Illes Balears
Sumita Mishra	Rochester Institute of Technology
Elif Miskioglu	The Ohio State University
Crista Mohammed	The University of the West Indies
Thabit Sultan Mohammed	Dhofar University
Maurizio Molinaro	ISMB
Santiago Moll	Universitat Politècnica de València
Margarita Moltó-Aribau	University of Lleida
Carla Montagud	Instituto de Ingeniería Energética, Universitat Politècnica de València
Juan Montero	Universidad Politecnica de Madrid
Young Moon	Syracuse University

Carlos Efrén Mora Luis	Universidad de La Laguna
Jose Antonio Moraño	Universitat Politècnica de València
Fernando Moreira	Portucalense University
Natalia Mosina	The City University of New York
Dulce Mota	FEUP - Faculty of Engineering, University of Porto
Regina Motz	Universidad de la Republica
Orna Muller	ORT Braude College of Engineering
Luana Müller	Pontifícia Universidade Católica do Rio Grande do Sul
José Daniel Muñoz Frías	Universidad Pontificia Comillas
Pedro Muñoz Merino	Universidad Carlos III de Madrid
Andrew Nafalski	University of South Australia
Hideo Nagumo	Niigata Seiryō University
Taichi Nakamura	National Institute of Informatics
Divya Nalla	Nalla Malla Reddy Engineering College
Jagadeesh Nandigam	Grand Valley State University
Debora Nascimento	Federal University of Bahia
Francisco Navas	Generalitat Valenciana
Jill Nelson	George Mason University
Victor Nelson	Auburn University
Edmund Nevin	Dublin Institute of Technology
Vu Nguyen	University of Science
Sandra Nite	Texas A&M University
Camilla Nix	Drexel University
John Noll	Lero, University of Limerick
Brian Novoselich	Virginia Tech
Eunice Nunes	Federal University of Mato Grosso
Robert O'Connell	University of Missouri-Columbia
Jerry O'Connor	San Antonio College
Asako Ohno	Osaka Sangyo University
Aurenice Oliveira	Michigan Technological University
Elaine Oliveira	Federal University of Amazonas
M. Oliveira	Universidade Federal do Espírito Santo
Francisco Oliveira	Ceara State University
Edson OliveiraJr	State University of Maringá
Celso Olivete Junior	Unesp - Campus de Presidente Prudente
Rick Olson	University of San Diego
Oladipo Onipede	Penn State Erie, The Behrend College
Pablo Orduña	Deusto Institute of Technology - DeustoTech, University of Deusto
Marisa Orr	Louisiana Tech University
Juan Ortega-Alvarez	Purdue University
Nestor Osorio	Northern Illinois University
Salvador Oton Tortosa	University of Alcala
Linda Ott	Michigan Technological University
Ranilson Paiva	Universidade Federal de Alagoas

Rogelio Palomera-Arias	University of Texas at San Antonio
Rafael Pastor Vargas	Spanish University for Distance Education - UNED
Pramod Pathak	National College of Ireland
Niranjan Pedanekar	Tata Research Development and Design Centre
Nathalia Peixoto	George Mason University
Daniela Peixoto	CEFET-MG
Branimir Pejcinovic	Portland State University
Andy Peng	University of Wisconsin - Stout
Jian Peng	Southeast Missouri State University
Cleon Pereira	Universidade Federal de Goiás
Jesus Alfonso Perez Gama	IEEE Life Senior - Education Society Colombia Chapter Chair
Jorge Perez-Martinez	Technical University of Madrid
Antoni Perez-Navarro	Universitat Oberta de Catalunya
Dragutin Petkovic	San Francisco State University
Aubrie Pfirman	Clemson University
Ruth Pflueger	Penn State Erie, The Behrend College
Nelson Piedra	UTPL
Magda Pinheiro	University of Minho
Francesca Polo	Purdue University
Enrico Pontelli	New Mexico State University
Gabriella Povero	Istituto Superiore Mario Boella
John Pritchard	Iowa State University
Senay Purzer	Purdue University
Ziming (Tom) Qi	Otago Polytechnic
Cheryl Zhenyu Qian	Purdue University
Kai Qian	Southern Polytechnic State University
Araceli Queiruga-Dios	University of Salamanca
Marián Queiruga-Dios	Pontifical University of Salamanca
Cathy-Ann Radix	The University of the West Indies at St. Augustine
Adam Raikes	Utah State University
Falcon Rankins	Virginia Commonwealth University
Alex Rayon	Avda. Universidades 24
Timothy Read	Spanish University for Distance Education - UNED
Gerald Recktenwald	Portland State University
David Reeping	Ohio Northern University
Robert Reese	Mississippi State University
Philip Reeves	Penn State University
Luisa Regueras	Universidad de Valladolid
Kenneth Reid	Virginia Tech
Christine Reilly	University of Texas - Pan American
Martin Reisslein	Arizona State University
Rodolfo Resende	Federal University of Minas Gerais
Angela Restrepo	Universidad de los Andes
Renata Revelo Alonso	University of Illinois at Urbana-Champaign

Jenni Rikala	University of Jyväskylä
Daniel Ringis	The University of the West Indies
Sebastian Rivas	University of Malaga
Presentacion Rivera-Reyes	Utah State University
Mona Rizvi	Nazarbayev University
Daniel Robinson	Colorado State University
Gregorio Robles	GSyC Librosoft, Universidad Rey Juan Carlos
Luz Robles	Universidad Nacional de Educación a Distancia - UNED
Antonio Robles-Gómez	Universidad Nacional de Educación a Distancia (UNED)
Kelsey Rodgers	Purdue University
Pilar Rodriguez	Universidad Autonoma de Madrid
Miguel Rodriguez-Artacho	UNED University
Luis Rodriguez-Gil	University of Deusto
Josef Rojter	Victoria University
Susana Romero	University of Deusto
Audrey Romero Peláez	Universidad Técnica Particular de Loja
Carla Romney	Boston University
Karla Maria Ronquillo Gonzalez	Universidad Tecnológica de Chihuahua
Salvador Ros	UNED
Francisco Ros-Bernal	Universitat Jaume I
Warren Rosen	Drexel University
Monique Ross	Engineering Education
Irene Rothe	Bonn-Rhine-Sieg University
Siegfried Rouvrais	Telecom Bretagne
Diane Rover	Iowa State University
Ildefonso Ruano Ruano	University of Jaen
Miguel Rubio	University of Granada
Susan Ruff	MIT
Anthony Ruocco	Roger Williams University
Catalina Rus-Casas	Universidad de Jaén
Anastasia Rynearson	Purdue University
Barbara Sabitzer	Alpen-Adria-Universität Klagenfurt
Lia Sadita	Universitas Indonesia
Cem Sahin	Drexel University
Noah Salzman	Boise State University
Luis Sanchez Ruiz	Universitat Politècnica de València
Teresa Sancho-Vinuesa	Universitat Oberta de Catalunya
Elio Sancristobal	Spanish University for Distance Education - UNED
Álvaro Santos	Center for Informatics and Systems – University of Coimbra
Juan Santos	University of Vigo
Ricardo Santos	Federal University of Mato Grosso do Sul
Harry Santoso	Universitas Indonesia
Gerardo Sarria	Pontificia Universidad Javeriana - Cali
Briana Saul	Lousiana State University

Mariano Savelski	Rowan University
Walter Schilling	Milwaukee School of Engineering
Corey Schimpf	Purdue University
Lizabeth Schlemer	Cal Poly, San Luis Obispo
Susan Schneider	Marquette University
Dario Schor	Magellan Aerospace
Andrea Schwandt	Bonn-Rhein-Sieg University of Applied Sciences
Michael Scott	Brunel University
Yvonne Sedelmaier	Coburg University of Applied Sciences and Arts
Elena Seleznova	Hlukkiv Pedagogical University
Brian Self	California Polytechnic State University
Kevin Sevilla	The University of Queensland
Hossain Shahriar	Kenn
Venky Shankararaman	Singapore Management University
Mark Sherriff	University of Virginia
Kristi Shryock	Texas A&M University
Junaid Siddiqui	King Fahd University of Petroleum and Minerals
Thomas Siller	Colorado State University
Emanuele Tuane Silva	Federal University of Alagoas
Marlos Silva	Federal University of Campina Grande
Priscylla Silva	Federal Institute of Sergipe (IFS)
Rahvindra Singh	Uttar Pradesh Technical University
Kumar Singh	Miami University
James Sluss	The University of Oklahoma
Richard Smith	Rensselaer Polytechnic Institute
Sally Smith	Edinburgh Napier University
Thérèse Smith	University of Connecticut
Karl Smith	University of Minnesota
Felipe Soares	CESAR / UFPE
Nicola Sochacka	University of Georgia
Shaymaa Sorour	Kyushu University
Draylson Souza	University of São Paulo
Andreas Spanias	ASU / SenSIP Center / School of ECEE
Jon Sticklen	Michigan Technological University
Itana Stiubiener	Universidade Federal do ABC UFABC
Jonathan Stolk	Franklin W. Olin College of Engineering
Scott Streiner	University of Pittsburgh
Aaron Striegel	University of Notre Dame
Vignesh Subbian	University of Cincinnati
Jaspal Subhlok	University of Houston
Toshiharu Sugawara	Waseda University
Kazuhide Sugimoto	Okinawa National College of Technology
Heru Suhartanto	University of Indonesia
Jarkko Suhonen	University of Eastern Finland

Xiaoyuan Suo	Webster University
Sukanya Suranauwarat	National Institute of Development Administration (NIDA)
Trudy Sutherland	Vaal University of Technology
Erkki Sutinen	University of Joensuu
Arthur Swart	Central University of Technology
Mariana Tafur	Purdue University
Dan Tappan	Eastern Washington University
Kassim Tarhini	United States Coast Guard Academy
Juan Carlos Tejero-Calado	University of Malaga
Marco Temperini	Sapienza University of Roma
Neena Thota	University of Saint Joseph
Carlos Tobar	Pontifical Catholic University of Campinas
Llanos Tobarra	UNED
Armando Toda	Universidade Estadual de Londrina
DeLean Tolbert	Purdue University
Ernesto Trajano de Lima	Universidade Federal do Ceará
V. Javier Traver	University Jaume I
James Trevelyan	University of Western Australia
Alicia Triviño	University of Malaga
Deborah Trytten	University of Oklahoma
Tayfun Tuna	University of Houston
Stephen Turner	University of Michigan-Flint
Carlos Turro	Universidad Politécnica de Valencia
Luther Tychonievich	University of Virginia
Suleyman Uludag	The University of Michigan - Flint
Diana Urbano	Faculdade de Engenharia da Universidade do Porto
Leo Ureel	Michigan Technological University
Jaime Urquiza-Fuentes	Universidad Rey Juan Carlos
Andika Utomo	Universitas Indonesia
Tristan Utschig	Georgia Institute of Technology
Jan Vahrenhold	University of Münster
M. Rodanas Valero	University of Zaragoza
Rosa Vasconcelos	Minho University
Carlos Vaz de Carvalho	Instituto Superior de Engenharia do Porto
Borja Vazquez Barreiros	University of Santiago de Compostela
J. Ángel Velázquez-Iturbide	Universidad Rey Juan Carlos
Germania Veloz-Remache	Escuela Politécnica Superior de Chimborazo
Chris Venters	East Carolina University
María Jesús Verdú Pérez	Universidad de Valladolid
Rakesh Verma	University of Houston
Hermanus Vermaak	Central University of Technology, Free State
Björn Victor	Uppsala University
Arto Vihavainen	University of Helsinki
Elsa Villa	The University of Texas at El Paso

Joerg Vollrath	University of Applied Science Kempten
Charles Wallace	Michigan Technological University
Andrew Wandel	University of Southern Queensland
Guoping Wang	14927 Sea Holly Ct.
Heather Watson	James Madison University
Alfred Weaver	University of Virginia
Robert Weissbach	Penn State Erie, The Behrend College
Marco Winzker	Bonn-Rhine-Sieg University
Dazhi Yang	Boise State
Na Yao	Queen Mary, University of London
Ara Yeghiazarian	Kingston University
Kumar Yelamarthi	Central Michigan University
Wook-Sung Yoo	Fairfield University
Cheah Yoong	Singapore University of Technology and Design
Xiaohong Yuan	North Carolina A & T State University
Sarah Zappe	Penn State University
Yevgeniya Zastavker	F. W. Olin College of Engineering
Jinghua Zhang	Winston-Salem State University
Xue Zhang	Arizona State University
Ling Zhao	Shanghai University
Carla Zoltowski	Purdue University
Sergio Zorzo	Federal University of Sao Carlos
Danilo Zutin	Carinthia University of Applied Sciences

Session Chairs

The conference committee would like to thank the people that have agreed to act as session chairs at the 2015 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 and those session chairs not listed for their efforts to help make FIE 2015 both informative and successful:

Code	Title	Start time	Room	Chair
T1A	Special Session: Connecting and Expanding the Emerging Engineering Education Research & Innovation (EER&I) Communities	11:00 AM	Kohlberg	Sohum Sohoni (Arizona State University, USA)
T1B	Special Session: Movin' Along: Investigating Motion and Mechanisms Using Engineering Design Activities	11:00 AM	Pancho Villa	Eric Durant (Milwaukee School of Engineering, USA)
T1C	First and Second Year Topics I	11:00 AM	Angus	Jon Sticklen (Michigan Technological University, USA)
T1D	K-12 Education I	11:00 AM	Brahma	David Reeping (Ohio Northern University, USA)
T1E	Social and Cognitive Aspects of Learning	11:00 AM	Charolais	Monique Ross (Engineering Education, USA)
T1F	Innovation and Entrepreneurship I	11:00 AM	Longhorn	Meagan Vaughan (University of Texas at El Paso, USA)
T1G	Learning in Teams	11:00 AM	Hereford	Katherine Goodman (University of Colorado Boulder, USA)
T1H	Learning Analytics I	11:00 AM	Rio Grande	Molly Hathaway Goldstein (Purdue University, USA)
T1I	Software Engineering Education	11:00 AM	Santa Fe	Rose Gamble (University of Tulsa, USA)
T2A	Special Session: Design Metaphors - Rethinking the Vocabulary of Design Education	2:30 PM	Kohlberg	Colin Smith (Edinburgh Napier University, United Kingdom)
T2B	Special Session: Helping Tomorrow's Engineers Ask Productive Questions	2:30 PM	Pancho Villa	Susan Kowalski (Colorado School of Mines, USA)
T2C	Innovative Curriculum & Course Design I	2:30 PM	Angus	Axel Böttcher (Munich University of Applied Sciences, Germany)
T2D	K-12 Education II	2:30 PM	Brahma	Glenda Young (Virginia Tech, USA)
T2E	Blended Learning Approaches	2:30 PM	Charolais	Asad Azemi (Pennsylvania State University, USA)
T2F	Game Based Learning I	2:30 PM	Longhorn	Todd Fernandez (Purdue University, USA)
T2G	Student Engagement I	2:30 PM	Hereford	Andrea M. Ogilvie (Virginia Tech, USA)

T2H	Learning Analytics II	2:30 PM	Rio Grande	Michael Mogessie Ashenafi (University of Trento, Italy)
T2I	Teaching Cryptography & Computer Security	2:30 PM	Santa Fe	Cem Sahin (Drexel University, USA)
T3A	Special Session: Introduction to Systematic Reviews in Engineering Education Research	4:30 PM	Kohlberg	Liping Liu (Lawrence Technological University, USA)
T3B	Special Session: Exploring the Black Box of Dissemination: The Role of Professional and Organizational Development	4:30 PM	Pancho Villa	Walter C. Lee (Virginia Tech, USA)
T3C	Engineering Identity	4:30 PM	Angus	James Huff (Harding University, USA)
T3D	Curriculum Change	4:30 PM	Brahma	Marja Talikka (Lappeenranta University of Technology, Finland)
T3E	Assessment in Computer Science	4:30 PM	Charolais Room	Thomas Staubit (Hasso Plattner Institute for Software Systems Engineering, Germany)
T3F	Game Based Learning II	4:30 PM	Longhorn	Jacques Duílio Brancher (Universidade Estadual de Londrina, Brazil)
T3G	Gender in Engineering and Computing I	4:30 PM	Hereford	Virginia Grande (Uppsala University, Sweden)
T3H	Motivation	4:30 PM	Rio Grande	Sadan Kulturel-Konak (Penn State Berks, USA)
T3I	Teaching and Learning Math	4:30 PM	Santa Fe	Christine F Reilly (University of Texas - Pan American, USA)
F1A	Special Session: Taking Stock: Using a Landscape Inventory to Drive Curriculum and Program Change	9:00 AM	Kohlberg	Yulei Pang (Southern Connecticut State University, USA)
F1B	Special Session: Helping your students learn "Engineering-ese": Using the results of conceptual change research to inform your instruction	9:00 AM	Pancho Villa	Ruth Streveler (Purdue University, USA)
F1C	Innovative Mobile Tools and Applications	9:00 AM	Angus	Amalia Rusu (Fairfield University, USA)
F1D	Game-Based Learning III	9:00 AM	Brahma	Jinghua Zhang (Winston-Salem State University, USA)
F1E	Flipped Classroom	9:00 AM	Charolais	Robert M O'Connell (University of Missouri-Columbia, USA)
F1F	Industry Oriented Teaching and Learning	9:00 AM	Longhorn	Bunmi Bababajide (Purdue University, USA)
F1G	MOOCs and Big Data	9:00 AM	Hereford	Anna Douglas (Purdue University, USA)
F1H	Teaching and Learning Programming I	9:00 AM	Rio Grande	Roberto A Bittencourt (State University of Feira de Santana, Brazil)
F1I	Cyber Security	9:00 AM	Santa Fe	Walter W Schilling, Jr (Milwaukee School of Engineering, USA)
F2A	Special Session: CE2016 Updated Computer Engineering Curriculum Guidelines	11:00 AM	Kohlberg	Xiaosong Li (Unitec Institute of Technology, New Zealand)
F2B	Special Session: What the Heck is That?! Adaptation of Evidence-Based Instructional Practices	11:00 AM	Pancho Villa	Lizabeth Schlemer (Cal Poly, San Luis Obispo, USA)
F2C	Mobile Teaching and Learning	11:00 AM	Angus	Manuel Castro (Spanish University for Distance Education, Spain)
F2D	Game-Based Learning IV	11:00 AM	Brahma	Bhojan Anand (National University of Singapore, Singapore)

F2E	Student Engagement II	11:00 AM	Charolais	Ricardo José Rocha Amorim (State University of Bahia (UNEB), Brazil)
F2F	Gender in Engineering and Computing II	11:00 AM	Longhorn	Amir Zeid (American University of Kuwait, Kuwait)
F2G	Faculty Development I	11:00 AM	Hereford	Jacqueline McNeil (University of Louisville, USA)
F2H	Teaching and Learning Programming II	11:00 AM	Rio Grande	Ivan Mauricio Cabezas (Universidad de San Buenaventura, Colombia)
F2I	Design Methods	11:00 AM	Santa Fe	Susan Donohue (University of Virginia, USA)
F3A	Special Session: Is the Engineer of 2035 a Maker?	2:30 PM	Kohlberg	Neha Choudhary (Purdue University, USA)
F3B	Special Session: Agents for Change in Engineering & Computer Science Education	2:30 PM	Pancho Villa	Kevin Buffardi (California State University - Chico, USA)
F3C	Using Robots in Teaching and Learning	2:30 PM	Angus	Kevin Gary (Arizona State University, USA)
F3D	Retention	2:30 PM	Brahma	Shaobo Huang (South Dakota School of Mines and Technology, United States)
F3E	Design Education II	2:30 PM	Charolais	Jay R Porter (Texas A&M University, USA)
F3F	Social Responsibility and Ethics	2:30 PM	Longhorn	Wilkistar Otieno (University of Wisconsin-Milwaukee, USA)
F3G	Faculty Development II	2:30 PM	Hereford	Jeffrey E Froyd (Texas A&M University, USA)
F3H	Interdisciplinary Education in Programming	2:30 PM	Rio Grande	Laura R. Hanlan (Worcester Polytechnic Institute, United States)
F3I	Embedded Systems Education I	2:30 PM	Santa Fe	Victor F. A. Barros (Science and Education Research Council, Portugal)
F4A	Special Session: Qualitative Research on Psychological Experience: A Starting Point for Using Interpretative Phenomenological Analysis	5:00 PM	Kohlberg	James Huff (Harding University, USA)
F4B	Special Session: Aesthetics and Emotional Engagement: Why it Matters to Our Students, Why it Matters to Our Professions	5:00 PM	Pancho Villa	Nathan Canney (Seattle University, USA)
F4C	Student-Centered Education I	5:00 PM	Angus	Brian Rague (Weber State University, USA)
F4D	K-12 Teacher Education and Computational Thinking	5:00 PM	Brahma	Charles Wallace (Michigan Technological University, United States)
F4E	K-12 Education III	5:00 PM	Charolais	Mary M Capraro (Texas A&M University, USA)
F4F	Design Education III	5:00 PM	Longhorn	Deeksha Seth (Drexel University, USA)
F4G	Philosophy Of Engineering	5:00 PM	Hereford	Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)
F4H	Professional Skills	5:00 PM	Rio Grande	Abe Zeid (Northeastern University, USA)
F4I	Embedded Systems Education II	5:00 PM	Santa Fe	Firas Hassan (Ohio Northern University, USA)
S1A	Panel: International iCampus Forum (IC15) on "Smart Education in Smart Cities"	9:00 AM	Kohlberg	Jason Ng (British Telecom, United Kingdom)
S1B	New Approaches-Student-Center	9:00 AM	Pancho Villa	Rangith Baby Kuriakose (University of Technology, South Africa)

S1C	Student Center Education	9:00 AM	Angus	Brian Skromme (Arizona State University, USA)
S1D	Assessment I	9:00 AM	Brahma	Vladik Kreinovich (University of Texas at El Paso, USA)
S1E	First and Second Year Topics II	9:00 AM	Charolais	Frank Vahid (University of California, Riverside, USA)
S1F	Online Assessment	9:00 AM	Longhorn	Dazhi Yang (Boise State, USA)
S1G	Innovative Curriculum & Course Design I	9:00 AM	Hereford	Venky Shankararaman (Singapore Management University, Singapore)
S1H	Innovative Curriculum & Course Design II	9:00 AM	Rio Grande	Wei-Fan Chen (Penn State University, USA)
S1I	Faculty Development III	9:00 AM	Santa Fe	Megan Tomko (Georgia Institute of Technology, USA)
S2A	Technological Tools I	11:00 AM	Kohlberg	Jean Hertzberg (University of Colorado Boulder, USA)
S2B	Computer Based Learning	11:00 AM	Pancho Villa	Rogério Garcia (São Paulo State University, Brazil)
S2C	Innovative Curriculum & Course Design III	11:00 AM	Angus	Rebecca Reck (University of Illinois at Urbana-Champaign, USA)
S2D	Curriculum Design III	11:00 AM	Brahma	Kari Systä (Tampere University of Technology, Finland)
S2E	Innovative Curriculum & Course Design IV	11:00 AM	Charolais	Brian Faulkner (University of Illinois, USA)
S2F	K-12 Education III	11:00 AM	Longhorn	Noah Salzman (Boise State University, USA)
S2G	Online-Distance Learning	11:00 AM	Hereford	Larry Richards (University of Virginia, USA)
S2H	Assessment	11:00 AM	Rio Grande	Senay Purzer (Purdue University, USA)
S2I	Innovative Curriculum & Course Design V	11:00 AM	Santa Fe	Dan Tappan (Eastern Washington University, USA)
S3A	Innovative Curriculum & Course Design VI	2:30 PM	Kohlberg	Paul B Crilly (United States Coast Guard Academy, USA)
S3B	Global Programs	2:30 PM	Pancho Villa	Joyce B. Main (Purdue University, USA)
S3C	Outreach & University, Community Collaborations	2:30 PM	Angus	Natascha Trellinger (Purdue University, USA)
S3D	First and Second Year Topics III	2:30 PM	Brahma	James Morris (Portland State University, USA)
S3E	Student Interest	2:30 PM	Charolais	Linda P. DuHadway (Utah State University, USA)
S3F	Student-Centered Education IV	2:30 PM	Longhorn	Jose Aguilar (Universidad de Los Andes, Venezuela)
S3G	K-12 Education IV	2:30 PM	Hereford	DeLean Tolbert (Purdue University, USA)
S3H	Innovative Curriculum & Course Design VII	2:30 PM	Rio Grande	Samuel A Malachowsky (Rochester Institute of Technology, USA)
S3I	Project-Based Learning	2:30 PM	Santa Fe	Stephen Frezza (Gannon University, USA)
S4B	Innovative Tools and Approaches	4:30 PM	Pancho Villa	Efraín O'Neill-Carrillo (University of Puerto Rico-Mayaguez, Puerto Rico)
S4C	Non-Traditional Students	4:30 PM	Angus	Maura Borrego (University of Texas at Austin, USA)
S4D	Technological Tools II	4:30 PM	Brahma	Jaspal Subhlok (University of Houston, USA)
S4E	Co-Ops and Early Career Training	4:30 PM	Charolais	Samantha Brunhaver (Arizona State University, USA)

S4F	Communication and Storytelling	4:30 PM	Longhorn	Imelda Smit (North West University, South Africa)
S4G	Computing Education	4:30 PM	Hereford	David R Monismith, Jr. (Northwest Missouri State University, USA)
S4I	Innovative Curriculum & Course Design VIII	4:30 PM	Santa Fe	Chiu Choi (University of North Florida, USA)

Session Grid – Wednesday, October 21st

Time	Brahma Room	Angus Room	Santa Fe Room	Pancho Villa Room	Kohlberg Room
1:00 PM - 4:00 PM	1A: Pre-Conference Workshop: Integrating Service-Learning into Engineering and Computing Education	1B: Pre-Conference Workshop: Teaching and Assessment Strategies that Value Innovative Thinking	1C: Pre-Conference Workshop: Process to Draft the Program Educational Objectives for Undergraduate Engineering Degree Programs	1D: Pre-Conference Workshop: Agile Way of Educating	1E: Pre-Conference Workshop: Ideas at Play: Bring games to your classroom to increase student engagement and deep learning
5:00 PM - 8:00 PM	2A: Pre-Conference Workshop: Encouraging Information Rich Engineering Design		2C: Pre-Conference Workshop: Agile Teaching and Learning	2D: Pre-Conference Workshop: How to Select an Area of Scholarship and Address the Applicable Review Criteria to Publish a Paper in the IEEE Transactions on Education	

Session Grid – Thursday, October 22nd

Time	Kohlberg Room	Pancho Villa Room	Angus Room	Brahma Room	Charolais Room	Longhorn Room	Hereford Room	Rio Grande Room	Santa Fe Room
11:00 AM - 12:30 PM	T1A: SS: Connecting and Expanding the Emerging Engineering Education Research & Innovation (EER&I) Communities	T1B: SS: Movin' Along: Investigating Motion and Mechanisms Using Engineering Design Activities	T1C: First and Second Year Topics I	T1D: K-12 Education I	T1E: Social and Cognitive Aspects of Learning	T1F: Innovation and Entrepreneurship I	T1G: Learning in Teams	T1H: Learning Analytics I	T1I: Software Engineering Education
2:30 PM - 4:00 PM	T2A: SS: Design Metaphors - Rethinking the vocabulary of design education	T2B: SS: Helping Tomorrow's Engineers Ask Productive Questions	T2C: Innovative Curriculum & Course Design I	T2D: K-12 Education II	T2E: Blended Learning Approaches	T2F: Game based learning I	T2G: Student engagement I	T2H: Learning Analytics II	T2I: Teaching Cryptography & Computer Security
4:30 PM - 6:00 PM	T3A: SS: Introduction to Systematic Reviews in Engineering Education Research	T3B: SS: Exploring the Black Box of Dissemination- The Role of Professional and Organizational Development	T3C: Engineering Identity	T3D: Curriculum change	T3E: Assessment in Computer Science	T3F: Game based learning II	T3G: Gender in Engineering and Computing I	T3H: Motivation	T3I: Teaching and Learning Math

Session Grid – Friday, October 23rd

Time	Kohlberg Room	Pancho Villa Room	Angus Room	Brahma Room	Charolais Room	Longhorn Room	Hereford Room	Rio Grande Room	Santa Fe Room
9:00 AM - 10:30 AM	F1A: SS: Taking Stock: Using a Landscape Inventory to Drive Curriculum and Program Change	F1B: SS: Helping your students learn "Engineering-ese": Using the results of conceptual change research to inform your instruction	F1C: Innovative Mobile Tools and Applications	F1D: Game-Based Learning III	F1E: Flipped Classroom	F1F: Industry Oriented Teaching and Learning	F1G: MOOCs and Big Data	F1H: Teaching and Learning Programming I	F1I: Cyber Security
11:00 AM - 12:30 PM	F2A: SS: CE2016 Updated Computer Engineering Curriculum Guidelines	F2B: Special Session: What the Heck is That?! Adaptation of Evidence-Based Instructional Practices	F2C: Mobile Teaching and Learning	F2D: Game-Based Learning IV	F2E: Student Engagement II	F2F: Gender in Engineering and Computing II	F2G: Faculty Development I	F2H: Teaching and Learning Programming II	F2I: Design Methods
2:30 PM - 4:00 PM	F3A: SS: Is the Engineer of 2035 a Maker?	F3B: Special Session: Agents for Change in Engineering & Computer Science Education	F3C: Using Robots in Teaching and Learning	F3D: Retention	F3E: Design Education II	F3F: Social Responsibility and Ethics	F3G: Faculty Development II	F3H: Interdisciplinary Education in Programming	F3I: Embedded Systems Education I
5:00 PM - 6:30 PM	F4A: SS: Qualitative Research on Psychological Experience: A Starting Point for Using Interpretative Phenomenological Analysis	F4B: Special Session: Aesthetics and Emotional Engagement: Why it Matters to Our Students, Why it Matters to Our Professions	F4C: Student-Centered Education I	F4D: K-12 Teacher Education and Computational Thinking	F4E: K-12 Education III	F4F: Design Education III	F4G: Philosophy of Engineering	F4H: Professional Skills	F4I: Embedded Systems Education II

Session Grid – Saturday, October 24th

Time	Kohlberg Room	Pancho Villa Room	Angus Room	Brahma Room	Charolais Room	Longhorn Room	Hereford Room	Rio Grande Room	Santa Fe Room
9:00 AM - 10:30 AM	S1A: Panel: International iCampus Forum (IC15) on "Smart Education in Smart Cities"	S1B: New Approaches- Student- Center	S1C: Student Center Education	S1D: Assessment I	S1E: First and Second Year Topics II	S1F: Online Assessment	S1G: Innovative Curriculum & Course Design I	S1H: Innovative Curriculum & Course Design II	S1I: Faculty Development III
11:00 AM - 12:30 PM	S2A: Technological Tools I	S2B: Computer Based Learning	S2C: Innovative Curriculum & Course Design III	S2D: Curriculum Design III	S2E: Innovative Curriculum & Course Design IV	S2F: K-12 Education III	S2G: Online- distance Learning	S2H: Assessment	S2I: Innovative Curriculum & Course Design V
2:30 PM - 4:00 PM	S3A: Innovative Curriculum & Course Design VI	S3B: Global Programs	S3C: Outreach & University, Community Collaborations	S3D: First and Second Year Topics III	S3E: Student Interest	S3F: Student- Centered Education IV	S3G: K-12 Education IV	S3H: Innovative Curriculum & Course Design VII	S3I: Project- Based Learning
4:30 PM - 6:00 PM		S4B: Innovative Tools and Approaches	S4C: Non- Traditional Students	S4D: Technological Tools II	S4E: Co-Ops and Early Career Training	S4F: Communication and Storytelling	S4G: Computing Education		S4I: Innovative Curriculum & Course Design VIII

Technical Sessions Table of Contents

Wednesday, October 21

1A: Pre-Conference Workshop: Integrating Service-Learning into Engineering and Computing Education

1:00 PM - 4:00 PM

Room: Brahma Room

INTEGRATING SERVICE-LEARNING INTO ENGINEERING AND COMPUTING EDUCATION

William C. Oakes (Purdue University, USA)

Carla B. Zoltowski (Purdue University, USA)

1B: Pre-Conference Workshop: Teaching and Assessment Strategies that Value Innovative Thinking

1:00 PM - 4:00 PM

Room: Angus Room

TEACHING AND ASSESSMENT STRATEGIES THAT VALUE INNOVATIVE THINKING

Şenay Purzer (Purdue University, USA)

Todd Fernandez (Purdue University, USA)

1C: Pre-Conference Workshop: Process to Draft the Program Educational Objectives for Undergraduate Engineering Degree Programs

1:00 PM - 4:00 PM

Room: Santa Fe Room

PROCESS TO DRAFT THE PROGRAM EDUCATIONAL OBJECTIVES FOR UNDERGRADUATE ENGINEERING DEGREE PROGRAMS

Ramakrishnan Sundaram (Gannon University, USA)

1D: Pre-Conference Workshop: Agile Way of Educating

1:00 PM - 4:00 PM

Room: Pancho Villa Room

AGILE WAY OF EDUCATING

Gerald Gannod (Miami University - Oxford, USA)

Douglas Troy (Miami University - Oxford, USA)

Jerome Luczaj (Miami University - Middletown, USA)

Diane Rover (Iowa State University, USA)

2A: Pre-Conference Workshop: Encouraging Information Rich Engineering Design

5:00 PM - 8:00 PM

Room: Brahma Room

WORKSHOP: ENCOURAGING INFORMATION-RICH ENGINEERING DESIGN

Michael Fosmire (Purdue University, USA)

Amy Van Epps (Purdue University, USA)

Laura Hanlan (Worcester Polytechnic Institute, USA)

2C: Pre-Conference Workshop: Agile Teaching and Learning

5:00 PM - 8:00 PM

Room: Santa Fe Room

PRE-CONFERENCE WORKSHOP: AGILE TEACHING AND LEARNING

Kevin Gary (The Ira A. Fulton Schools of Engineering, USA)

Sohum Sohoni (The Ira A. Fulton Schools of Engineering, USA)

Suhas Xavier (The Ira A. Fulton Schools of Engineering, USA)

2D: Pre-Conference Workshop: How to Select an Area of Scholarship and Address the Applicable Review Criteria to Publish a Paper in the IEEE Transactions on Education

5:00 PM - 8:00 PM

Room: Pancho Villa Room

HOW TO SELECT AN AREA OF SCHOLARSHIP AND ADDRESS THE APPLICABLE REVIEW CRITERIA TO PUBLISH A PAPER IN THE IEEE TRANSACTIONS ON EDUCATION

Jeffrey E. Froyd (Texas A&M University, USA)

Thursday, October 22

TIA: Special Session: Connecting and Expanding the Emerging Engineering Education Research & Innovation (EER&I) Communities

Chair: Sohum Sohoni (Arizona State University, USA)

11:00 AM - 12:30 PM

Room: Kohlberg Room

CONNECTING AND EXPANDING THE EMERGING ENGINEERING EDUCATION RESEARCH & INNOVATION (EER&I) COMMUNITIES

Karl Smith (Purdue University & University of Minnesota, USA)

Ruth Streveler (Purdue University, USA)

Rocio C. Chavela Guerra (American Society for Engineering Education, USA)

TIB: Special Session: Movin' Along: Investigating Motion and Mechanisms Using Engineering Design Activities

Chair: Eric Durant (Milwaukee School of Engineering, United States)

11:00 AM - 12:30 PM

Room: Pancho Villa Room

FIE 2015 SPECIAL SESSION - MOVIN' ALONG: INVESTIGATING MOTION AND MECHANISMS USING ENGINEERING DESIGN ACTIVITIES

Susan Donohue (University of Virginia, USA)

Larry Richards (University of Virginia, USA)

TIC: First and Second Year Topics I

Chair: Jon Sticklen (Michigan Technological University, United States)

11:00 AM - 12:30 PM

Room: Angus Room

ALUMNI AS A RESOURCE TO INCREASE STUDENT RETENTION IN EARLY COMPUTER SCIENCE COURSES

Linda Ott (Michigan Technological University, USA)

COMPARING COMMON AND DISCIPLINE-SPECIFIC FIRST-YEAR ENGINEERING PROGRAMS: EXAMINING THE NEED AND EXPLAINING THE STUDY

Mahnas Jean Mohammadi-Aragh (Mississippi State University, USA)

Rachel L. Kajfez (The Ohio State University, USA)

AN "OBJECTS FIRST, TESTS SECOND" APPROACH FOR SOFTWARE ENGINEERING EDUCATION

Veronika Thurner (Munich University of Applied Sciences, Germany)

Axel Böttcher (Munich University of Applied Sciences, Germany)

THE IMPACTS OF PROJECT BASED LEARNING ON SELF-DIRECTED LEARNING AND PROFESSIONAL SKILL ATTAINMENT: A COMPARISON OF PROJECT BASED LEARNING TO TRADITIONAL ENGINEERING EDUCATION

Bart Johnson (Itasca Community College, USA)

Ron Ulseth (Iron Range Engineering, USA)

Crystal Smith (Itasca Community College, USA)

Derek Fox (Itasca Community College, USA)

AN EVALUATION OF HOW CHANGES TO THE INTRODUCTORY COMPUTER SCIENCE COURSE SEQUENCE IMPACT STUDENT SUCCESS

Christine Reilly (University of Texas-Pan American, USA)

Emmett Tomai (University of Texas-Pan American, USA)

Laura Grabowski (University of Texas-Pan American, USA)

TID: K-12 Education I

Chair: David Reeping (Ohio Northern University, United States)

11:00 AM - 12:30 PM

Room: Brahma Room

EMPOWERING TEACHERS TO TEACH CS - EXPLORING A SOCIAL CONSTRUCTIVIST APPROACH FOR CS CPD, USING THE BRIDGE21 MODEL

J. R. Byrne (Centre for Research in IT in Education, Ireland)

L. Fisher (Centre for Research in IT in Education, Ireland)

B. Tangney (Centre for Research in IT in Education, Ireland)

ENGAGE K-12 STUDENTS IN ENGINEERING: MODEL FOR ENGINEERING PROJECT ACTIVITIES TO INSPIRE K-12 STUDENTS TO PURSUE CAREERS IN ENGINEERING

Ramakrishnan Sundaram (Gannon University, USA)

VIEWING K-12 MATHEMATICS AND SCIENCE STANDARDS THROUGH THE LENS OF THE FIRST-YEAR INTRODUCTION TO ENGINEERING COURSE CLASSIFICATION SCHEME

David Reeping (Ohio Northern University, USA)

Kenneth Reid (Virginia Tech, USA)

EFFECTS OF THE BUTTERFLY DIAGRAM EDUCATION IN PRIMARY AND SECONDARY SCHOOLS ON CONTRADICTION PROBLEM SOLVING ABILITY

Jung Suk Hyun (Jeju National University, Korea)

Chan Jung Park (Jeju National University, Korea)

TIE: Social and Cognitive Aspects of Learning

Chair: Monique Ross (Engineering Education, USA)

11:00 AM - 12:30 PM

Room: Charolais Room

AN ENGINEERING STUDENT LEADERSHIP DEVELOPMENT MODEL FOR 21ST CENTURY ENGINEERING: USING SOCIOCULTURAL THEORY TO INFORM PRACTICE

Elsa Villa (The University of Texas at El Paso, USA)

Alberto Esquinca (The University of Texas at El Paso, USA)

Erika Mein (The University of Texas at El Paso, USA)

Peter Golding (The University of Texas at El Paso, USA)

Sarah Hug (University of Colorado Boulder, USA)

DOCUMENTING STUDENTS' FAULTY SCHEMA AND MISCONCEPTIONS ABOUT COMBINATIONS AND PERMUTATIONS

Lance Pittman (University of Illinois at Urbana-Champaign, USA)

Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)

TAXONOMY OF FACULTY ASSUMPTIONS ABOUT STUDENTS

Aaron Estrada (California Polytechnic State University, USA)

Lizabeth Thompson Schlemmer (California Polytechnic State University, USA)

SOCIOCULTURAL APPROACHES TO TEACHING AND LEARNING IN ENGINEERING EDUCATION: RESEARCH-BASED APPLICATIONS IN A PRE-ENGINEERING COURSE

Erika Mein (The University of Texas at El Paso, USA)

Christina Convertino (The University of Texas at El Paso, USA))

Angelica Monarrez (The University of Texas at El Paso, USA)

QUALITATIVE ASSESSMENT OF THE UNIVERSITY OF TEXAS SYSTEM LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION SUMMER RESEARCH ACADEMY ABROAD: AN INTERNATIONAL EXPERIENCE IN RESEARCH AND CULTURE

Ariana Arciero-Pino (The University of Texas at El Paso, USA)

Benjamin Flores (The University of Texas at El Paso, USA)

Helmut Knaust (The University of Texas at El Paso, USA)

Lynda Gonzales (The University of Texas at Austin, USA)

Maricel Quintana-Baker (MQB-Consulting, USA)

TIF: Innovation and Entrepreneurship I

Chair: Meagan Vaughan (University of Texas at El Paso, United States)

11:00 AM - 12:30 PM

Room: Longhorn Room

LANDSCAPE ANALYSIS AS A TOOL IN THE CURRICULAR CHANGE PROCESS

Elizabeth Nilsen (VentureWell, USA)

Victoria Matthew (VentureWell, USA)

Mary Besterfield-Sacre (University of Pittsburgh, USA)

Thema Monroe-White (SageFox Consulting Group, USA)

FOSTERING THE ENTREPRENEURIAL MINDSET IN THE JUNIOR AND SENIOR MECHANICAL ENGINEERING CURRICULUM WITH A MULTI-COURSE PROBLEM-BASED LEARNING EXPERIENCE

Liping Liu (Lawrence Technological University, USA)

James Mynderse (Lawrence Technological University, USA)

Andrew L. Gerhart (Lawrence Technological University, USA)

Selin Arslan (Lawrence Technological University, USA)

ASSESSING SITUATIONAL CURIOSITY AND MOTIVATION IN OPEN-ENDED DESIGN ELECTIVES

Charles Kim (Bucknell University, USA)

Alan Cheville (Bucknell University, USA)

Katharyn Nottis (Bucknell University, USA)

Joseph Tranquillo (Bucknell University, USA)

Erin Jablonski (Bucknell University, USA)

Michael Prince (Bucknell University, USA)

Margot Vigeant (Bucknell University, USA)

"INNOVATIVE OFFICE": BUILDING FUTURE FOR YOUNG ENGINEERS

Melany M. Ciampi (Safety, Health and Environment Research Organization, Brazil)

Luis Amaral (Computer Graphics Center, Portugal)

Victor F. A. Barros (Science and Education Research Council, Portugal)

Claudio da Rocha Brito (Science and Education Research Council, Brazil)

Rosa Vasconcelos (University of Minho, Portugal)

TIG: Learning in Teams

Chair: Katherine Goodman (University of Colorado Boulder, USA)

11:00 AM - 12:30 PM

Room: Hereford Room

TASK CHOICE, GROUP DYNAMICS, AND LEARNING GOALS: UNDERSTANDING STUDENT ACTIVITIES IN TEAMS

Laura Hirshfield (University of Michigan, USA)

Debbie Chachra (Olin College of Engineering, USA)

THE IMPACT OF A PEER LEARNING STRATEGY ON STUDENT ACADEMIC PERFORMANCE IN A FUNDAMENTAL ENGINEERING COURSE

Shaobo Huang (South Dakota School of Mines and Technology, USA)
Elizabeth Pierce (South Dakota School of Mines and Technology, USA)

TIH: Learning Analytics I

Chair: Molly Hathaway Goldstein (Purdue University, United States)

11:00 AM - 12:30 PM

Room: Rio Grande Room

CHECKABLE ANSWERS: UNDERSTANDING STUDENT BEHAVIORS WITH INSTANT FEEDBACK IN A BLENDED LEARNING CLASS

Xin Chen (Purdue University, USA)
Jennifer DeBoer (Purdue University, USA)

AUTOMATIC RECOGNITION OF MISCONCEPTIONS IN VISUAL ALGORITHM SIMULATION EXERCISES

Ari Korhonen (Aalto University, Finland)
Otto Seppälä (Aalto University, Finland)
Juha Sorva (Aalto University, Finland)

FORMULATION OF A PREDICTIVE MODEL FOR ACADEMIC PERFORMANCE BASED ON STUDENTS' ACADEMIC AND DEMOGRAPHIC DATA

Sandra Milena Merchán Rubiano (Universidad El Bosque, Colombia)
Jorge Alberto Duarte García (Universidad El Bosque, Colombia)

ELICITED AND MINED RULES FOR DROPOUT PREVENTION IN ONLINE COURSES

Francisco A. de Almeida, Neto (Federal University of Amazonas, Brazil)
Alberto Castro (Federal University of Amazonas, Brazil)

XAPI-SRL: USES OF AN APPLICATION PROFILE FOR SELF-REGULATED LEARNING BASED ON THE ANALYSIS OF LEARNING STRATEGIES

Mario Manso-Vázquez (University of Vigo, Spain)
Manuel Caeiro-Rodríguez (University of Vigo, Spain)
Martín Llamas-Nistal (University of Vigo, Spain)

TII: Software Engineering Education

Chair: Rose Gamble (University of Tulsa, USA)

11:00 AM - 12:30 PM

Room: Santa Fe Room

AN APPROACH TO ENHANCE STUDENTS' COMPETENCY IN SOFTWARE VERIFICATION TECHNIQUES

Omar Ochoa (University of Texas at El Paso, USA)
Salamah Salamah (University of Texas at El Paso, USA)

EVALUATION AND ASSESSMENT OF EFFECTS ON EXPLORING MUTATION TESTING IN PROGRAMMING COURSES

Rafael Oliveira (University of São Paulo, Brazil)
Lucas Oliveira (University of São Paulo, Brazil)
Bruno Cafeo (PUC-Rio, Brazil)
Vinicius Durelli (University of São Paulo, Brazil)

DIVERSITY AND ANXIETY: A CASE STUDY ON COLLABORATIVE TESTING

Yulei Pang (Southern Connecticut State University, USA)
Raymond Mugno (Southern Connecticut State University, USA)
Xiaozhen Xue (Texas Tech University, USA)

USABILITY CHALLENGES IN DIGITAL LEARNING SOLUTIONS

Veera Kenttälä (University of Jyväskylä, Finland)
Marja Kankaanranta (University of Jyväskylä, Finland)
Rebekah Rousi (University of Jyväskylä, Finland)
Terhi Pänkäläinen (University of Jyväskylä, Finland)

APPLYING MINDSTORM IN TEACHING AND LEARNING PROCESS AND SOFTWARE PROJECT MANAGEMENT

José Augusto Fabri (Universidade Tecnológica Federal do Paraná, Brazil)
Alexandre L'Erario (Universidade Tecnológica Federal do Paraná, Brazil)
Rodrigo Henrique Cunha Palácios (Universidade Tecnológica Federal do Paraná, Brazil)
Wagner Godoy (Universidade Tecnológica Federal do Paraná, Brazil)

T2A: Special Session: Design Metaphors - Rethinking the vocabulary of design education

Chair: Colin Smith (Edinburgh Napier University, United Kingdom)

2:30 PM - 4:00 PM

Room: Kohlberg Room

SPECIAL SESSION ON DESIGN METAPHORS: RETHINKING THE VOCABULARY OF DESIGN EDUCATION

Stephen Frezza (Gannon University, USA)
John Krupczak, Jr (Hope College, USA)
Mani Mina (Iowa State University, USA)

T2B: Special Session: Helping Tomorrow's Engineers Ask Productive Questions

Chair: Susan Kowalski (Colorado School of Mines, United States)

2:30 PM - 4:00 PM

Room: Pancho Villa Room

HELPING TOMORROW'S ENGINEERS ASK PRODUCTIVE QUESTIONS

Frank Kowalski (Colorado School of Mines, USA)
Susan Kowalski (Colorado School of Mines, USA)

T2C: Innovative Curriculum & Course Design I

Chair: Axel Böttcher (Munich University of Applied Sciences, Germany)

2:30 PM - 4:00 PM

Room: Angus Room

AN EXPLORATION OF BLOOM'S KNOWLEDGE, SKILLS, AND A FFECTIVE-BASED GOALS IN PROMOTING DEVELOPMENT OF FRESHMEN ENGINEERING STUDENTS' PROFESSIONAL IDENTITIES

Idalis Villanueva (Utah State University, USA)

BUILDING INFORMATION MODELING LABORATORY EXERCISES IN A CONSTRUCTION SCIENCE AND MANAGEMENT BUILDING SYSTEMS COURSE

Rogelio Palomera-Arias (University of Texas at San Antonio, USA)

HOW THE WEB WAS WON: KEEPING THE COMPUTER NETWORKING CURRICULUM CURRENT WITH HTTP/2

Colin Allison (University of St Andrews, United Kingdom)
Hussein Bakri (University of St Andrews, United Kingdom)

UNDERSTANDING THE PROTOTYPING STRATEGIES OF EXPERIENCED DESIGNERS

Ethan Hilton (Georgia Institute of Technology, USA)
Julie Linsey (Georgia Institute of Technology, USA)
Joseph Goodman (Georgia Tech Research Institute, USA)

T2D: K-12 Education II

Chair: Glenda Young (Virginia Tech, United States)

2:30 PM - 4:00 PM

Room: Brahma Room

STEM LITERACY: CHALLENGES IMPLEMENTING 'E' IN LOCAL TEXAS-STEM ACADEMIES

Michele C. Williams (University of Texas at El Paso, USA)

MODELING: A COMPUTER SCIENCE CONCEPT FOR GENERAL EDUCATION

Barbara Sabitzer (Alpen-Adria-Universität Klagenfurt, Austria)

Stefan Pasterk (Alpen-Adria-Universität Klagenfurt, Austria)

DISSECT: EXPLORING THE RELATIONSHIP BETWEEN COMPUTATIONAL THINKING AND ENGLISH LITERATURE IN K-12 CURRICULA

Natasha Nesiba (New Mexico State University, USA)

Enrico Pontelli (New Mexico State University, USA)

Timothy Staley (Las Cruces Public Schools, USA)

USING LIFE COURSE THEORY TO FRAME WOMEN AND GIRLS' TRAJECTORIES TOWARD (OR AWAY) FROM COMPUTING: PRE HIGH-SCHOOL THROUGH COLLEGE YEARS

Corey Schimpf (Purdue University, USA)

Kelly Andronicos (Purdue University, USA)

Joyce Main (Purdue University, USA)

MOTIVATIONAL FACTORS PREDICTING STEM AND ENGINEERING CAREER INTENTIONS FOR HIGH SCHOOL STUDENTS

Daniel Mangu (Arizona State University, USA)

Andrew Lee (Arizona State University, USA)

James Middleton (Arizona State University, USA)

Jill Nelson (George Mason University, USA)

T2E: Blended Learning Approaches

Chair: Asad Azemi (Pennsylvania State University, United States)

2:30 PM - 4:00 PM

Room: Charolais Room

TARGETED BLENDED LEARNING THROUGH COMPETENCY ASSESSMENT IN AN UNDERGRADUATE INFORMATION SYSTEMS PROGRAM

Joelle Ducrot (Singapore Management University, Singapore)

Venky Shankararaman (Singapore Management University, Singapore)

INSTRUCTOR AND GRADUATE TEACHING ASSISTANT DEVELOPMENT AND TRAINING FOR A BLENDED LINEAR CIRCUITS AND ELECTRONICS COURSE

Bonnie Ferri (Georgia Institute of Technology, USA)

Wendy Newstetter (Georgia Institute of Technology, USA)

David Majerich (Georgia Institute of Technology, USA)

A FEEDBACK-BASED APPROACH FOR EVOLVING A BLENDED CLASS MODEL FOR LARGE ENROLLMENT, MULTIPLE SECTION CIRCUITS COURSES

Bonnie Ferri (Georgia Institute of Technology, USA)

Joyelle Harris (Georgia Institute of Technology, USA)

Mary Ann Weitnauer (Georgia Institute of Technology, USA)

David Majerich (Georgia Institute of Technology, USA)

IMPROVING THE LEARNING OF PHYSICS CONCEPTS BY USING HAPTIC DEVICES

Luis Neri (Humanidades y Ciencias Sociales Tecnológico de Monterrey, Mexico)
David Escobar-Castillejos (Humanidades y Ciencias Sociales Tecnológico de Monterrey, Mexico)
Julieta Noguez (Humanidades y Ciencias Sociales Tecnológico de Monterrey, Mexico)
Uzma Shaikh (Purdue University, USA)
Alejandra J. Magana (Purdue University, USA)
Bedrich Benes (Purdue University, USA)

EXPRESSION TASKS FOR NOVICE PROGRAMMERS:

TURNING THE ATTENTION TO OBJECTIVITY, RELIABILITY AND VALIDITY

Matthias Laengrich (University of Applied Sciences Zittau / Goerlitz, Germany)
Joerg Schulze (University of Applied Sciences Zittau / Goerlitz, Germany)
Amruth N. Kumar (Ramapo College of New Jersey, USA)

T2F: Game based learning I

Chair: Todd Fernandez (Purdue University, USA)

2:30 PM - 4:00 PM

Room: Longhorn Room

THE ISSUES OF ADOPTING SIMULATION GAMES IN SOFTWARE ENGINEERING CLASSES

Daniela Peixoto (CEFET-MG, Brazil)
Rodolfo Resende (Federal University of Minas Gerais, Brazil)
Clarindo Pádua (Federal University of Minas Gerais, Brazil)

DIGITAL LOCKDOWN: A 3D ADVENTURE GAME FOR ENGINEERING EDUCATION

Rasha Morsi (Norfolk State University, USA)
Shawn Mull (Norfolk State University, USA)

EVALUATION OF SIGMA, AN EMPIRIC STUDY WITH MATH TEACHERS

Armando Maciel Toda (Universidade Estadual de Londrina, Brazil)
Roberto do Carmo (Universidade Estadual de Londrina, Brazil)
Vitor Campos (Universidade Estadual de Londrina, Brazil)
Ana Lucia Silva (Universidade Estadual de Londrina, Brazil)
Jacques D. Brancher (Universidade Estadual de Londrina, Brazil)

BADGES AND XP: AN OBSERVATIONAL STUDY ABOUT LEARNING

Ranilson Paiva (Federal University of Campina Grande, Brazil)
Armando Sobrinho (Universidade Federal de Alagoas, Brazil)
Ezequiel Farias (Universidade Federal de Alagoas, Brazil)
Daniel Pimentel (Universidade Federal de Alagoas, Brazil)
Ig Ibert Bittencourt (Universidade Federal de Alagoas, Brazil)

SYSTEMATIC REVIEW OF LITERATURE: EDUCATIONAL GAMES ABOUT ELECTRIC ENERGY CONSUMPTION

Adriana Keiko Nishida (ABC Federal University, Brazil)
Juliana Cristina Braga (ABC Federal University, Brazil)

T2G: Student engagement I

Chair: Andrea M. Ogilvie (Virginia Tech, United States)

2:30 PM - 4:00 PM

Room: Hereford Room

ENGAGING STUDENTS INSIDE THE CLASSROOM TO INCREASE LEARNING

Kristi J. Shryock (Texas A&M University, USA)

CAN STUDENT ENGAGEMENT BE MEASURED? AND, IF SO, DOES IT MATTER?

Perry Samson (University of Michigan, USA)

***ENGINEERING STUDENTS' MOTIVATIONAL BELIEFS DEVELOPMENT
OF A SCALE UTILIZING AN EXPECTANCY, VALUE, AND COST FRAMEWORK***

Mariafé Panizo (James Madison University, USA)
Casey Williamson (James Madison University, USA)
Olga Pierrakos (James Madison University, USA)
Robin Anderson (James Madison University, USA)
Verena Bethke (James Madison University, USA)
Cheryl Welch (James Madison University, USA)

***EXPERIMENTS WITH PERSONAL OWNERSHIP OF QUALITY
AT THE UNIVERSITY OF TEXAS AT EL PASO***

Oscar Mondragon (University of Texas at El Paso, USA)
Jagadish Thimiri Mallikarjan (University of Texas at El Paso, USA)
Eric Smith (University of Texas at El Paso, USA)

***TEACHING METACOGNITION: HELPING ENGINEERING STUDENTS
TAKE OWNERSHIP OF THEIR OWN LEARNING***

Patrick Cunningham (Rose-Hulman Institute of Technology, USA)
Holly Matusovich (Virginia Tech, USA)
Deirdre Hunter (Virginia Tech, USA)
Rachel McCord (University of Tennessee, USA)

T2H: Learning Analytics II

Chair: Michael Mogessie Ashenafi (University of Trento, Italy)

2:30 PM - 4:00 PM

Room: Rio Grande Room

PREDICTING STUDENTS' FINAL EXAM SCORES FROM THEIR COURSE ACTIVITIES

Michael Mogessie Ashenafi (University of Trento, Italy)
Giuseppe Riccardi (University of Trento, Italy)
Marco Ronchetti (University of Trento, Italy)

***A QUANTITATIVE CASE STUDY IN ENGINEERING OF THE EFFICACY
OF QUALITY CHEAT-SHEETS***

Yang Song (NC State University, USA)
David Thuente (NC State University, USA)

***INNOVATION WITHIN THE CONSTRAINTS OF SUSTAINABILITY:
ANALYSIS OF PRODUCT DEVELOPMENT PROJECTS***

Young Moon (Syracuse University, USA)
Mingtao Wu (Syracuse University, USA)

***BLOOM'S TAXONOMY IN SOFTWARE ENGINEERING EDUCATION:
A SYSTEMATIC MAPPING STUDY***

Ricardo Britto (Blekinge Institute of Technology, Sweden)
Muhammad Usman (Blekinge Institute of Technology, Sweden)

T2I: Teaching Cryptography & Computer Security
Chair: Cem Sahin (Drexel University, United States)
2:30 PM - 4:00 PM
Room: Santa Fe Room

A PROJECT-BASED MULTI-DISCIPLINARY ELECTIVE ON DIGITAL DATA PROCESSING TECHNIQUES

Firas Hassan (Ohio Northern University, USA)
Joao Lucas Magalini Zago (Ohio Northern University, USA)
Victor de Campos Pentea (Ohio Northern University, USA)
Rodrigo Santos (Ohio Northern University, USA)

DEVELOPING A COURSE MODULE FOR TEACHING CRYPTOGRAPHY PROGRAMMING ON ANDROID

Jinsheng Xu (North Carolina A&T University, USA)
Xiaohong Yuan (North Carolina A&T State University, USA)

AN INSIDER THREAT ACTIVITY IN A SOFTWARE SECURITY COURSE

Daniel Krutz (Rochester Institute Of Technology, USA)
Andrew Meneely (Rochester Institute of Technology, USA)
Samuel A Malachowsky (Rochester Institute of Technology, USA)

A STRUCTURED APPROACH TO TRAINING OPEN-ENDED PROBLEM SOLVING

Sofia Cassel (Uppsala University, Sweden)
Björn Victor (Uppsala University, Sweden)

MOBILE SECURITY EDUCATION ON PORTABLE LABS

Dan Chia-Tien Lo (Southern Polytechnic State University, USA)
Kai Qian (Southern Polytechnic State University, USA)
Wei Chen (Tennessee State University, USA)

T3A: Special Session: Introduction to Systematic Reviews in Engineering Education Research

Chair: Liping Liu (Lawrence Technological University, United States)
4:30 PM - 6:00 PM
Room: Kohlberg Room

SPECIAL SESSION: INTRODUCTION TO SYSTEMATIC REVIEWS IN ENGINEERING EDUCATION RESEARCH

Jeffrey E Froyd (Texas A&M University, USA)
Maura Borrego (University of Texas at Austin, USA)
Margaret Foster (Texas A&M University, USA)
Hyung Sok Choe (The University of Texas at Austin, USA)
Julie Martin (Clemson University, USA)
Xueshu Chen (University of Texas at Austin, USA)

T3B: Special Session: Exploring the Black Box of Dissemination: The Role of Professional and Organizational Development

Chair: Walter C. Lee (Virginia Tech, USA)
4:30 PM - 6:00 PM
Room: Pancho Villa Room

EXPLORING THE BLACK BOX OF DISSEMINATION: THE ROLE OF PROFESSIONAL AND ORGANIZATIONAL DEVELOPMENT

Stephanie Cutler (Embry-Riddle Aeronautical University, USA)
Alexandra Coso Strong (Franklin W. Olin College of Engineering, USA)
Mel Chua (Purdue University, USA)

T3C: Engineering Identity

Chair: James Huff (Harding University, United States)

4:30 PM - 6:00 PM

Room: Angus Room

TRANSITIONING STUDENTS NAVIGATING ENGINEERING IDENTITIES

DeLean Tolbert (Purdue University, USA)

Morgan Hynes (Purdue University, USA)

Darryl Dickerson (Purdue University, USA)

Monica Cardella (Purdue University, USA)

IS CHANGING PEDAGOGY A GOOD BAIT IN ATTRACTING STUDENTS TO ENGINEERING?

Josef Rojter (Victoria University, Australia)

USING PEER-LED TEAM LEARNING TO BUILD UNIVERSITY-COMMUNITY COLLEGE RELATIONSHIPS

Ann Gates (The University of Texas at El Paso, USA)

Claudia Casas (The University of Texas at El Paso, USA)

Christian Servin (El Paso Community College, USA)

Michelle Slattery (Peak Research, USA)

THE CREATION AND INAUGURATION OF ENGINEERING LEADERSHIP: UTEP AND OLIN COLLEGE INNOVATION PROJECT

Peter Golding (University of Texas at El Paso, USA)

Roger Gonzalez (University of Texas at El Paso, USA)

Gilberto Moreno (University of Texas at El Paso, USA)

Richard Schoephoerster (University of Texas at El Paso, USA)

Scott Starks (University of Texas at El Paso, USA)

Meagan Vaughan (University of Texas at El Paso, USA)

Jessica Townsend (Franklin W. Olin College of Engineering, USA)

BECOMING BOUNDARY SPANNERS IN ENGINEERING: IDENTIFYING ROLES, ACTIVITIES, AND COMPETENCIES

Brent Jesiek (Purdue University, USA)

Andrea Mazzurco (Purdue University, USA)

Natascha Trellinger (Purdue University, USA)

Kavitha Ramane (Purdue University, USA)

T3D: Curriculum change

Chair: Marja Talikka (Lappeenranta University of Technology, Finland)

4:30 PM - 6:00 PM

Room: Brahma Room

PIVOT THINKING - PREDICTING ENTREPRENEURIAL INTENT AMONG ENGINEERING STUDENTS AND FACULTY USING PROBLEM SOLVING STYLE PREFERENCE

Mark Schar (Stanford University, USA)

CREATING A NEW CIVIL ENGINEERING PROGRAM IN THE 21ST CENTURY

Kenneth Leitch (West Texas A&M University, USA)

Erick Butler (West Texas A&M University, USA)

DESIGN AND PRACTICE FROM THE MICROMOUSE COMPETITION TO THE UNDERGRADUATE CURRICULUM

Shenghua Dai (Beijing Jiaotong University, P.R. China)

Bingxian Zhao (Beijing Jiaotong University, P.R. China)

Zhengjiao Li (Beijing Jiaotong University, P.R. China)

Ming Dai (Beijing Jiaotong University, USA)

***BUILDING FACULTY EXPERTISE IN OUTCOME-BASED EDUCATION
CURRICULUM DESIGN***

Srividya Bansal (Arizona State University, USA)
Ashraf Gaffar (Arizona State University, USA)
Odesma Dalrymple (University of San Diego, USA)

***GLOBAL VS. LOCAL - EXPERIENCES FROM A DISTRIBUTED SOFTWARE
PROJECT COURSE USING AGILE METHODOLOGIES***

Outi Sievi-Korte (Tampere University of Technology, Finland)
Kari Systä (Tampere University of Technology, Finland)
Rune Hjelsvold (Gjøvik University College, Norway)

T3E: Assessment in Computer Science

Chair: Thomas Staubitz (Hasso Plattner Institute for Software Systems Engineering, Germany)

4:30 PM - 6:00 PM

Room: Charolais Room

A TREE INCLUSION ANALYZER FOR EXAMINING INTRODUCTORY PROGRAMMING CODES

Marlos Tacio Silva (Federal University of Campina Grande, Brazil)
Evandro de Barros Costa (Federal University of Alagoas, Brazil)
Michel de Sousa Miranda (Federal University of Alagoas, Brazil)
Emanuele Tuane Silva (Federal University of Alagoas, Brazil)

***ANALYZING THE IMPACT OF ASYNCHRONOUS MULTIMEDIA FEEDBACK ON
NOVICE COMPUTER PROGRAMMERS***

Walter W Schilling, Jr (Milwaukee School of Engineering, USA)

***AN EVALUATION METHOD FOR PANORAMIC UNDERSTANDING OF
PROGRAMMING BY COMPARISON WITH VISUAL EXAMPLES***

Dick Martinez Calderon (Kobe University, Japan)
Kin Man (Kobe University, Japan)
Hidenari Kiyomitsu (Kobe University, Japan)
Kazuhiro Ohtsuki (Kobe University, Japan)
Yukinobu Miyamoto (Kobe Institute of Computing, Japan)
Yi Sun (Kobe Institute of Computing, Japan)

IDENTIFYING LEARNING-INDUCTIVE CONTENT IN PROGRAMMING DISCUSSION FORUMS

I-Han Hsiao (Arizona State University, USA)
Fatima Naveed (Arizona State University, USA)

GAUGING INFLUENCE IN SOFTWARE DEVELOPMENT TEAMS

Allen Marshall (University of Tulsa, USA)
Rose Gamble (University of Tulsa, USA)

T3F: Game based learning II

Chair: Jacques Duílio Brancher (Universidade Estadual de Londrina, Brazil)

4:30 PM - 6:00 PM

Room: Longhorn Room

***ADAPTIVE SYSTEMS AS ENABLERS OF FEEDBACK IN ENGLISH LANGUAGE
LEARNING GAME-BASED ENVIRONMENTS***

Mariia Gavriushenko (University of Jyväskylä, Finland)
Laura Karilainen (University of Jyväskylä, Finland)
Marja Kankaanranta (University of Jyväskylä, Finland)

***GAME-BASED ASSESSMENT FOR RADIOFREQUENCY CIRCUITS
COURSES IN ENGINEERING***

Luis Felipe Zapata Rivera (EAFIT University, Colombia)
Catalina Aranzazu-Suescun (University of Antioquia, Colombia)

***TEACHING K-12 STUDENTS STEM-C RELATED TOPICS THROUGH PLAYING
AND CONDUCTING RESEARCH***

Iva Bojic (Massachusetts Institute of Technology, USA)
Juan Arratia (Ana G. Méndez University System, USA)

USING SIMULATION GAMES TO TEACH GLOBAL SOFTWARE ENGINEERING COURSES

Amir Zeid (American University of Kuwait, Kuwait)

***ON COMBINING GAMIFICATION THEORY AND ABET CRITERIA FOR
TEACHING AND LEARNING ENGINEERING***

Ivan Mauricio Cabezas (Universidad de San Buenaventura, Colombia)

T3G: Gender in Engineering and Computing I

Chair: Virginia Grande (Uppsala University, Sweden)

4:30 PM - 6:00 PM

Room: Hereford Room

***IS THERE A GENDER DIFFERENCE IN MATHS COMPETENCIES ACHIEVEMENT BETWEEN
AEROSPACE ENGINEERING STUDENTS IN SPAIN?***

S. Moll (Universitat Politècnica de València, Spain)
J.-A. Morano (Universitat Politècnica de València, Spain)
M.-D. Roselló (Universitat Politècnica de València, Spain)
L.M. Sanchez Ruiz (Universitat Politècnica de València, Spain)

CODEPLUS - DESIGNING AN AFTER SCHOOL COMPUTING PROGRAMME FOR GIRLS

K. Sullivan (Trinity College Dublin, Ireland)
J. R Byrne (Trinity College Dublin, Ireland)
N. Bresnihan (Trinity College Dublin, Ireland)
K. O'Sullivan (Trinity College Dublin, Ireland)
B. Tangney (Trinity College Dublin, Ireland)

INSIGHTS FROM A FIRST-YEAR LEARNING COMMUNITY TO ACHIEVE GENDER BALANCE

William Oakes (Purdue University, USA)
Ming-Chien Hsu (Purdue University, USA)
Carla Zoltowski (Purdue University, USA)

***EFFECTS OF GENDER AND ABSTRACT THINKING FACTORS ON
ADOLESCENTS' COMPUTER PROGRAM LEARNING***

Chan Jung Park (Jeju National University, Korea)
Jung Suk Hyun (Jeju National University, Korea)
Jin Heulan (Jeju National University High School, Korea)

STORIES OF BLACK WOMEN IN ENGINEERING INDUSTRY - WHY THEY LEAVE

Monique Ross (Purdue University, USA)
Allison Godwin (Purdue University, USA)

T3H: Motivation

Chair: Sadan Kulturel-Konak (Penn State Berks, United States)

4:30 PM - 6:00 PM

Room: Rio Grande Room

THE EFFECT OF USING ONLINE TUTORS ON THE SELF-EFFICACY OF LEARNERS

Amruth N. Kumar (Ramapo College of New Jersey, USA)

TEAMWORK ATTITUDE, INTEREST, AND SELF-EFFICACY: THEIR IMPLICATIONS FOR TEACHING TEAMWORK SKILLS TO ENGINEERING STUDENTS

Abdullah Konak (Penn State Berks, USA)

Sadan Kulturel-Konak (Penn State Berks, USA)

Gül E. Okudan Kremer (Penn State University Park, USA)

Ivan E. Esparragoza (Penn State Brandywine, USA)

ENGINEERING SELF-EFFICACY, INTERACTIONS WITH FACULTY, AND OTHER FORMS OF CAPITAL FOR UNDERREPRESENTED ENGINEERING STUDENTS

Sandra Dika (University of North Carolina at Charlotte, USA)

Miguel A. Pando (University of North Carolina at Charlotte, USA)

Brett Tempest (University of North Carolina at Charlotte, USA)

Krystal Foxx (University of North Carolina at Charlotte, USA)

Monica Allen (University of North Carolina at Charlotte, USA)

HOW THE APPLICATION OF COPING STRATEGIES CAN EMPOWER LEARNING

Kirsi Helkala (Norwegian Defence Cyber Academy, Norway)

Benjamin Knox (Norwegian Defence Cyber Academy, Norway)

Øyvind Jøsok (Norwegian Defence Cyber Academy, Norway)

DYNAMIC ASSESSMENT OF LEARNERS' MENTAL STATE FOR AN IMPROVED LEARNING EXPERIENCE

Aniruddha Sinha (Tata Consultancy Services Ltd., India)

Rahul Gavvas (Tata Consultancy Services Ltd., India)

Debatri Chatterjee (Tata Consultancy Services Ltd., India)

Rajat Das (Tata Consultancy Services Ltd., India)

Arijit Sinharay (Tata Consultancy Services Ltd., India)

T3I: Teaching and Learning Math

Chair: Christine F Reilly (University of Texas - Pan American, USA)

4:30 PM - 6:00 PM

Room: Santa Fe Room

A SUMMER BRIDGE TO CALCULUS FOR STUDENTS WITH HIGH SCHOOL CALCULUS EXPERIENCE

Virgil Pierce (The University of Texas - Pan American, USA)

Javier A. Kypuros (The University of Texas - Pan American, USA)

COMPUTATIONAL COMPLEXITY OF COLLEGE MATH EIGENVALUE PROBLEMS

Yuki Mori (Hosei University, Japan)

Shuichi Yukita (Hosei University, Japan)

CALCTUTOR: APPLYING THE TEACHERS DILEMMA METHODOLOGY TO CALCULUS PEDAGOGY

Kristian Kime (Brandeis University, USA)

Rebecca Torrey (Brandeis University, USA)

Timothy Hickey (Brandeis University, USA)

Friday, October 23

F1A: Special Session: Taking Stock: Using a Landscape Inventory to Drive Curriculum and Program Change

Chair: Yulei Pang (Southern Connecticut State University, USA)

9:00 AM - 10:30 AM

Room: Kohlberg Room

TAKING STOCK: USING A LANDSCAPE INVENTORY TO DRIVE CURRICULUM AND PROGRAM CHANGE

Elizabeth Nilsen (VentureWell, USA)

Victoria Matthew (VentureWell, USA)

Mary Besterfield-Sacre (University of Pittsburgh, USA)

Thema Monroe-White (SageFox Consulting Group, USA)

F1B: Special Session: Helping your students learn "Engineering-ese": Using the results of conceptual change research to inform your instruction

Chair: Ruth Streveler (Purdue University, USA)

9:00 AM - 10:30 AM

Room: Pancho Villa Room

HELPING YOUR STUDENTS LEARN "ENGINEERING-ESE": USING THE RESULTS OF CONCEPTUAL CHANGE RESEARCH TO INFORM YOUR INSTRUCTION

Ruth Streveler (Purdue University, USA)

Shane Brown (Oregon State University, USA)

Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)

Holly Matusovich (Virginia Tech, USA)

Devlin Montfort (Oregon State University, USA)

F1C: Innovative Mobile Tools and Applications

Chair: Amalia Rusu (Fairfield University, United States)

9:00 AM - 10:30 AM

Room: Angus Room

SHOWTELL: AN EASY-TO-USE TOOL FOR ANSWERING STUDENTS' QUESTIONS WITH VOICE-OVER RECORDING

Anand Bhojan (National University of Singapore, Singapore)

Kwan Yong Kang Nicholas (National University of Singapore, Singapore)

Nidhi Sharma (National University of Singapore, Singapore)

INNOVATIVE MOBILE TOOL FOR ENGINEERING EMBEDDED DESIGN AND SECURITY EDUCATIONS

Kuo-Sheng Ma (Southern Polytechnic State University, USA)

Yingnan Ma (Southern Polytechnic State University, USA)

Yanchen Wang (Southern Polytechnic State University, USA)

Kai Qian (Southern Polytechnic State University, USA)

Qichang Zheng (Southern Polytechnic State University, USA)

Liang Hong (Tennessee State University, USA)

COMMEASY: AN INNOVATIVE INTERACTIVE COMMUNICATION SYSTEM FOR PROMOTING COMMUNICATION AND PARTICIPATION

Abeer Algarni (Princess Nourah bint Abdulrahman University, Saudi Arabia)

Liz Burd (The University of Newcastle, Australia)

***PERCEPTIONS OF STUDENTS AND INSTRUCTORS TOWARD THE ROLE OF
COMMEASY IN TACKLING COMMUNICATION AND INTERACTION BARRIERS
IN DISTANCE-LEARNING CLASSROOMS***

Abeer Algarni (Princess Nourah bint Abdulrahman University, Saudi Arabia)
Liz Burd (The University of Newcastle, Australia)

FID: Game-Based Learning III

Chair: Jinghua Zhang (Winston-Salem State University, United States)

9:00 AM - 10:30 AM

Room: Brahma Room

***ONLINE GAME-BASED PROGRAMMING LEARNING FOR HIGH SCHOOL
STUDENTS - A CASE STUDY***

Thiago Reis da Silva (Federal University of Rio Grande do Norte (UFRN), Brazil)
Eduardo Henrique da Silva Aranha (Federal University of Rio Grande do Norte (UFRN), Brazil)

REINFORCING STUDENT UNDERSTANDING OF LINKED LIST OPERATIONS IN A GAME

Jinghua Zhang (Winston-Salem State University, USA)
Mustafa Atay (Winston-Salem State University, USA)
Elvira Caldwell (Winston-Salem State University, USA)
Elva Jones (Winston-Salem State University, USA)

***SYNTAX CIRCUITRY: A MOBILE GAME FOR PRACTICING
PROGRAMMING LANGUAGE SYNTAX***

W. A. Shellington (Norfolk State University, USA)
T. O. Humphries (Norfolk State University, USA)
R. Morsi (Norfolk State University, USA)
Mona A. E. Rizvi (Nazarbayev University, USA)

TEACHING PROGRAMMING CONCEPTS TO ELEMENTARY STUDENTS

Chad Williams (Central Connecticut State University, USA)
Emtethal Alafghani (Central Connecticut State University, USA)
Antony Daley Jr. (Central Connecticut State University, USA)
Kevin Gregory (Central Connecticut State University, USA)
Marianella Rydzewski (Central Connecticut State University, USA)

***PLAYING AND LEARNING WITH GAMIFICATION: AN IN-CLASS CONCURRENT
AND DISTRIBUTED PROGRAMMING ACTIVITY***

Rodrigo Filev Maia (Centro Universitário FEI, Brazil)
Felipe Reis Graeml (Centro Universitário FEI, Brazil)

FIE: Flipped Classroom

Chair: Robert M O'Connell (University of Missouri-Columbia, United States)

9:00 AM - 10:30 AM

Room: Charolais Room

***TOWARDS A FLIPPED CYBER CLASSROOM TO FACILITATE ACTIVE
LEARNING STRATEGIES***

Stephen Turner (University of Michigan-Flint, USA)
Mark Allison (The University of Michigan-Flint, USA)
Zahid Syed (The University of Michigan-Flint, USA)
Michael Farmer (The University of Michigan-Flint, USA)

***EVALUATING THE EFFECT OF THOUGHTFUL DESIGN OF IN-CLASS
TIME FOR A FLIPPED CLASSROOM***

C.J. McClelland (Colorado School of Mines, USA)

***ADAPTING A CONCEPT OF FRAMING TO UNDERSTAND HOW STUDENTS LEARN IN
PROBLEM-CENTERED GROUP LEARNING IN FLIPPED ENGINEERING CLASSROOMS***

Jia-Ling Lin (University of Minnesota, USA)

Paul Imbertson (University of Minnesota, USA)

Kristen Gorman (University of Minnesota, USA)

Tamara J. Moore (Purdue University, USA)

***EVALUATING FLIPPED CLASSROOMS WITH RESPECT TO THRESHOLD CONCEPTS
LEARNING IN UNDERGRADUATE ENGINEERING***

Elaine Khoo (University of Waikato, New Zealand)

Jonathan Scott (University of Waikato, New Zealand)

Mira Peter (University of Waikato, New Zealand)

Howell Round (University of Waikato, New Zealand)

FIF: Industry Oriented Teaching and Learning

Chair: Bunmi Bababajide (Purdue University, United States)

9:00 AM - 10:30 AM

Room: Longhorn Room

***A LETTER TO THE FUTURE ENGINEER: EXPLORING CROSS-CULTURAL ENGINEERING
IDENTITIES THROUGH PRACTITIONERS' LETTERS OF ADVICE***

Héctor E Rodríguez-Simmonds (Purdue University, USA)

Matilde Sánchez-Peña (Purdue University, USA)

S. Zahra Atiq (Purdue University, USA)

Genisson Silva Coutinho (Purdue University, USA)

Brent Jesiek (Purdue University, USA)

***COLLABORATION IN THE DEVELOPMENT OF A PRECISION ENGINEERING PROGRAMME AT
LIMERICK INSTITUTE OF TECHNOLOGY IN RESPONSE TO A CALL FROM INDUSTRY***

Ciarán O'Loughlin (Limerick Institute of Technology, Ireland)

John Walsh (Limerick Institute of Technology, Ireland)

Tony Mahon (Limerick Institute of Technology, Ireland)

LOCALIZED OPEN SOURCE COLLABORATION IN SOFTWARE ENGINEERING EDUCATION

Kevin Buffardi (California State University - Chico, USA)

***TEACHING DIGITAL TV PROGRAMMING FOR ENGINEERING STUDENTS:
AN INDUSTRY ORIENTED PROPOSAL***

Waldir Sabino da Silva Junior (Federal University of Amazonas, Brazil)

Vicente Ferreira de Lucena Junior (Federal University of Amazonas, Brazil)

FIG: MOOCs and Big Data

Chair: Anna Douglas (Purdue University, United States)

9:00 AM - 10:30 AM

Room: Hereford Room

***TENDENCIES TOWARDS DEEP OR SURFACE LEARNING FOR PARTICIPANTS
TAKING A LARGE MASSIVE OPEN ONLINE COURSE (MOOC)***

Amber Kemppainen (Michigan Technological University, USA)

Jon Sticklen (Michigan Technological University, USA)

Barbara Oakley (Oakland University, USA)

Denzel Chung (Temasek Polytechnic, Singapore)

SCALING YOUTH DEVELOPMENT TRAINING IN IT USING AN XMOOC PLATFORM

Martin Löwis (Beuth Hochschule, Germany)
Thomas Staubitz (Hasso Plattner Institute, Germany)
Ralf Teusner (Hasso Plattner Institute, Germany)
Jan Renz (Hasso Plattner Institute, Germany)
Christoph Meinel (Hasso Plattner Institute, Germany)
Susanne Tannert (Hasso Plattner Institute, Germany)

FROM FLIPPED CLASSROOM THEORY TO THE PERSONALIZED DESIGN OF LEARNING EXPERIENCES IN MOOCS

Aracele Garcia de Oliveira Fassbinder (Federal Institute of Education, Science and Technology, Brazil)
Marcelo Fassbinder (Federal Institute of Education, Science and Technology, Brazil)
Ellen Francine Barbosa (University of São Paulo, Brazil)

SMARTLAK: A BIG DATA ARCHITECTURE FOR SUPPORTING LEARNING ANALYTICS SERVICES

Thomas Rabelo (Faculdade de Ciências Aplicadas e Sociais de Petrolina, Brazil)
Manuel Lama (Universidade de Santiago de Compostela, Spain)
Ricardo R. Amorim (Faculdade de Ciências Aplicadas e Sociais de Petrolina, Brazil)
Juan Vidal (Universidade de Santiago de Compostela, Spain)

FIH: Teaching and Learning Programming I

Chair: Roberto A Bittencourt (State University of Feira de Santana, Brazil)

9:00 AM - 10:30 AM

Room: Rio Grande Room

THE USE OF LEARNING OBJECTS FOR TEACHING COMPUTER PROGRAMMING

Luiz Carlos Begosso (Fundacao Educacional do Municipio de Assis, Brazil)
Luiz Ricardo Begosso (Fundacao Educacional do Municipio de Assis, Brazil)
Alexandre Ribeiro (Fundacao Educacional do Municipio de Assis, Brazil)
Rafaela Martins dos Santos (Fundacao Educacional do Municipio de Assis, Brazil)
Raissa Begosso (BS Tecnologia, Brazil)

LOOK MA, NO TEMPLATES! PROBLEM-BASED LEARNING OF COMPUTATIONAL PHYSICS FOR NOVICE PROGRAMMERS

David Roundy (Oregon State University, USA)
Eric J. Krebs (Oregon State University, USA)
Jeff B. Schulte (Oregon State University, USA)
Greg S. Mulder (Linn-Benton Community College, USA)

INTEREST-DRIVEN AND INNOVATION-ORIENTED PRACTICE FOR PROGRAMMING COURSES

Lingling Zhao (Harbin Institute of Technology, P.R. China)
Xiaohong Su (Harbin Institute of Technology, P.R. China)
Tiantian Wang (Harbin Institute of Technology, P.R. China)
Yongfeng Yuan (Harbin Institute of Technology, P.R. China)

FLIPPING A PROGRAMMING COURSE: THE GOOD, THE BAD, AND THE UGLY

Carolyn Rosiene (University of Hartford, USA)
Joel Rosiene (Eastern Connecticut State University, USA)

ENHANCING OBJECT-ORIENTED PROGRAMMING EDUCATION USING STATIC AND DYNAMIC VISUALIZATION

Jeong Yang (Texas A&M University-Kingsville, USA)
Young Lee (Texas A&M University-Kingsville, USA)
David Hicks (Texas A&M University-Kingsville, USA)
Kai H. Chang (Auburn University, USA)

FII: Cyber Security

Chair: Walter W Schilling, Jr (Milwaukee School of Engineering, USA)

9:00 AM - 10:30 AM

Room: Santa Fe Room

WIRELESS CYBERSECURITY EDUCATION VIA A SOFTWARE DEFINED RADIO LABORATORY

Cem Sahin (Drexel University, USA)

Danh Nguyen (Drexel University, USA)

James Chacko (Drexel University, USA)

Kapil Dandekar (Drexel University, USA)

STUDENT-CENTERED LEARNING IN CYBERSECURITY IN SUMMER SEMESTER

Xiaojun Wu (Tsinghua University, P.R. China)

Shuzhen Tian (Tsinghua University, P.R. China)

USING A CASE STUDY TO TEACH STUDENTS ABOUT FINDING AND FIXING LOGIC FLAWS IN SOFTWARE

Lindsay Simpkins (North Carolina A&T State University, USA)

Xiaohong Yuan (North Carolina A&T State University, USA)

Huiming Yu (North Carolina A&T State University, USA)

Kenneth Williams (North Carolina A&T State University, USA)

HEALTHCARE SECURITY: A COURSE ENGAGING FEMALES IN CYBERSECURITY EDUCATION

Krishnendu Ghosh (Miami University, USA)

F2A: Special Session: CE2016 Updated Computer Engineering Curriculum Guidelines

Chair: Xiaosong Li (Unitec Institute of Technology, New Zealand)

11:00 AM - 12:30 PM

Room: Kohlberg Room

CE2016: UPDATED COMPUTER ENGINEERING CURRICULUM GUIDELINES

Eric Durant (Milwaukee School of Engineering, USA)

John Impagliazzo (Hofstra University, USA)

Susan Conry (Clarkson University, USA)

Robert Reese (Mississippi State University, USA)

Herman Lam (University of Florida, USA)

Victor Nelson (Auburn University, USA)

Joseph Hughes (Georgia Tech, USA)

Weidong Liu (Tsinghua University, P.R. China)

Junlin Lu (Peking University, P.R. China)

Andrew McGettrick (University of Strathclyde, United Kingdom)

F2B: Special Session: What the Heck is That?! Adaptation of Evidence-Based Instructional Practices

Chair: Lizabeth Schlemer (Cal Poly, San Luis Obispo, USA)

11:00 AM - 12:30 PM

Room: Pancho Villa Room

WHAT THE HECK IS THAT?!***ADAPTATION OF EVIDENCE-BASED INSTRUCTIONAL PRACTICES***

James Pembridge (Embry-Riddle Aeronautical University, USA)

Matthew Verleger (Embry-Riddle Aeronautical University, USA)

Stephanie Cutler (Embry-Riddle Aeronautical University, USA)

F2C: Mobile Teaching and Learning

Chair: Manuel Castro (Spanish University for Distance Education - UNED, Spain)

11:00 AM - 12:30 PM

Room: Angus Room

A TALE OF TWO MOBILE LEARNING JOURNEYS WITH SMARTPHONES AND TABLETS: THE INTERPLAY OF TECHNOLOGY AND IMPLEMENTATION CHANGE

Mirna Domancic (Faculty of Electrical Engineering and Computing University of Zagreb, Croatia)

Jelena Baksa (Faculty of Electrical Engineering and Computing University of Zagreb, Croatia)

Tomislav Jagušć (Faculty of Electrical Engineering and Computing University of Zagreb, Croatia)

Ivica Botički (Faculty of Electrical Engineering and Computing University of Zagreb, Croatia)

Peter Seow (National Institute of Education, Singapore)

Chee-Kit Looi (National Institute of Education, Singapore)

THE EXPERIENCES OF SETTING UP, DEVELOPING AND IMPLEMENTING A MOBILE LEARNING PROJECT IN CROATIA: THE SCOLLAM PROJECT

Tomislav Jagušć (University of Zagreb Faculty of Electrical Engineering and Computing, Croatia)

Igor Mekterović (University of Zagreb Faculty of Electrical Engineering and Computing, Croatia)

Ivica Botički (University of Zagreb Faculty of Electrical Engineering and Computing, Croatia)

CHILO: USING AN E-TEXTBOOK TO CREATE AN AD-HOC M-LEARNING ENVIRONMENT

Masumi Hori (NPO CCC-TIES, Japan)

Seishi Ono (NPO CCC-TIES, Japan)

Shinzo Kobayashi (SmileNC & Co, Japan)

Kazutsuna Yamaji (Research and Development Centre for Academic Networks, Japan)

Toshihiro Kita (Kumamoto University, Japan)

Tsuneo Yamada (Open University of Japan, Japan)

FROM REALITY TO AUGMENTED REALITY: RAPID STRATEGIES FOR DEVELOPING MARKER-BASED AR CONTENT USING IMAGE CAPTURING AND AUTHORING TOOLS

Jorge D. Camba (University of Houston, USA)

Manuel Contero (Universitat Politècnica de València, Spain)

AN INVESTIGATION OF THE USE OF MOBILE MATHEMATICS APPLICATIONS: AN AFRICAN PERSPECTIVE

M.I. Venter (Central University of Technology Free State, South Africa)

A.B. Van der Walt (Central University of Technology, South Africa)

A.J. Swart (Central University of Technology, South Africa)

L. de Wet (University of the Free State, South Africa)

F2D: Game-Based Learning IV

Chair: Bhojan Anand (National University of Singapore, Singapore)

11:00 AM - 12:30 PM

Room: Brahma Room

DIGITAL DEFENDERS - COMPUTER SECURITY LITERACY VIA GAME-BASED LEARNING

Jin-Ning Tioh (Iowa State University, USA)

Mani Mina (Iowa State University, USA)

INTEGRATION OF THE ARTS AND TECHNOLOGY IN GK-12 SCIENCE COURSES

Daphney Chery (Drexel University, USA)

Susan Mburu (Philadelphia High School for Girls, USA)

Jessica Ward (Drexel University, USA)

Adam Fontecchio (Drexel University, USA)

***INTRODUCING GAMING TOOLS FOR COMPUTING EDUCATION IN STEM
RELATED CURRICULA***

Amalia Rusu (Fairfield University, USA)

***SCAFFOLDING IN EDUCATIONAL VIDEO GAMES: AN APPROACH TO
TEACHING COLLABORATIVE SUPPORT SKILLS***

Anna Loparev (University of Rochester, USA)

Christopher Egert (Rochester Institute of Technology, USA)

***PROJECT MANAGEMENT GAME 2D (PMG-2D): A SERIOUS GAME TO ASSIST
SOFTWARE PROJECT MANAGERS TRAINING***

José Eduardo Nunes Lino (Pontifícia Universidade Católica do Paraná, Brazil)

Marco Antonio Paludo (Pontifícia Universidade Católica do Paraná, Brazil)

Fabio Vinicius Binder (Pontifícia Universidade Católica do Paraná, Brazil)

Sheila Reinehr (Pontifícia Universidade Católica do Paraná, Brazil)

Andreia Malucelli (Pontifícia Universidade Católica do Paraná, Brazil)

F2E: Student engagement II

Chair: Ricardo José Rocha Amorim (State University of Bahia (UNEB), Brazil)

11:00 AM - 12:30 PM

Room: Charolais Room

ENGAGING GRADUATE STUDENTS THROUGH ONLINE LECTURE CREATION

Mireille Boutin (Purdue University, USA)

Joanne Lax (Purdue University, USA)

***EFFECTIVENESS OF PRACTICES WITH SENSORS IN ENGAGING IN MEANINGFUL LEARNING IN
HIGHER EDUCATION: EXTENDING A FRAMEWORK OF UBIQUITOUS LEARNING***

Josilene Almeida Brito (UFPE - Informatics Centre - Pernambuco, Brazil)

Ricardo Amorim (UNEB - Education Department, Brazil)

Bruno de Sousa Monteiro (UFERSA - Federal Rural University of Semiarid Region, Brazil)

Alex Sandro Gomes (UFPE - Informatics Centre - Pernambuco, Brazil)

Ivanildo José de Melo Filho (UFPE - Informatics Centre - Pernambuco, Brazil)

***INCREASING STUDENT ENGAGEMENT THROUGH THE DEVELOPMENT OF
INTERDISCIPLINARY COURSES: LINKING ENGINEERING AND TECHNOLOGY,
THE SCIENCES, AND THE HUMANITIES***

Dana L. Collins (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Nayda G. Santiago (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Héctor Huyke (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Christopher Papadopoulos (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

J. Fernando Vega-Riveros (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Ana Nieves-Rosa (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Anderson Brown (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Raúl Portuondo (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Matias Cafaro (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

Matthew Landers (University of Puerto Rico - Mayagüez Campus, Puerto Rico)

***LATINAS' RESILIENCE AND PERSISTENCE IN COMPUTER SCIENCE AND ENGINEERING:
PRELIMINARY FINDINGS OF A QUALITATIVE STUDY EXAMINING IDENTITY AND AGENCY***

Alberto Esquinca (The University of Texas at El Paso, USA)

Elsa Villa (The University of Texas at El Paso, USA)

Elaine Hampton (The University of Texas at El Paso, USA)

Martine Ceberio (The University of Texas at El Paso, USA)

Luciene Wandermurem (The University of Texas at El Paso, USA)

MAKING CO-OP WORK: AN EXPLORATION OF STUDENT ATTITUDES TO CO-OP PROGRAMS

Sally Smith (Edinburgh Napier University, United Kingdom)
Tessa Berg (Heriot Watt University, United Kingdom)
Colin Smith (Edinburgh Napier University, United Kingdom)

F2F: Gender in Engineering and Computing II

Chair: Amir Zeid (American University of Kuwait, Kuwait)

11:00 AM - 12:30 PM

Room: Longhorn Room

***PERSPECTIVES ON VOLUNTEERING FOR INITIATIVES FOR WOMEN IN COMPUTING:
A CASE STUDY***

Virginia Grande (Uppsala University, Sweden)

***SOFTWARE ENGINEERING EDUCATION - DOES GENDER MATTER IN PROJECT RESULTS? -
A CHILEAN CASE STUDY***

Maíra Marques (Universidad de Chile, Chile)

WORK/FAMILY ATTITUDES OF COMPUTING GRADUATE STUDENTS

Leslie Cintron (University of Virginia, USA)
J. McGrath Cohoon (University of Virginia, USA)

STUDENT EVALUATIONS OF TEAM MEMBERS: IS THERE GENDER BIAS?

Joyce B. Main (Purdue University, USA)
Matilde Sánchez-Peña (Purdue University, USA)

***WOMEN IN STEM: THE IMPACT OF STEM PBL IMPLEMENTATION ON
PERFORMANCE, ATTRITION, AND COURSE CHOICE OF WOMEN***

Peter Boedeker (Texas A&M University, USA)
Robert M. Capraro (Texas A&M University, USA)
Mary Margaret Capraro (Texas A&M University, USA)
Sandra Nite (Texas A&M University, USA)

F2G: Faculty Development I

Chair: Jacqueline McNeil (University of Louisville, United States)

11:00 AM - 12:30 PM

Room: Hereford Room

***EXAMINING THE RELATIONSHIP BETWEEN FACULTY TEACHING PRACTICE AND
INTERCONNECTIVITY IN A SOCIAL NETWORK***

James Middleton (Arizona State University, USA)
Stephen Krause (Arizona State University, USA)
Kendra Beeley (Arizona State University, USA)
Eugene Judson (Arizona State University, USA)
John Ernzen (Arizona State University, USA)
Robert Culbertson (Arizona State University, USA)

PREPARING FOR AN ACADEMIC CAREER - THE ENGINEERING FACULTY OF TOMORROW

Susan Schneider (Marquette University, USA)
Jennifer Bonniwell (Marquette University, USA)

INNOVATIVE FACULTY COHORT HIRE AT THE UNIVERSITY OF SAN DIEGO

Susan M. Lord (University of San Diego, USA)
Lisa Baird (University of San Diego, USA)
Jane Friedman (University of San Diego, USA)
Perla Myers (University of San Diego, USA)
Sandra Sgoutas-Emch (University of San Diego, USA)
Michelle Camacho (University of San Diego, USA)

TAILOR-MADE: MEETING THE UNIQUE NEEDS OF WOMEN OF COLOR STEM-SBS FACULTY THROUGH MENTORING

DeLois Kijana Crawford (Department of Sociology and Anthropology, USA)

THE ROLE OF COLLABORATIVE INQUIRY IN TRANSFORMING FACULTY PERSPECTIVES ON USE OF REFLECTION IN ENGINEERING EDUCATION

Trevor Harding (California Polytechnic State University, USA)
Katherine Chen (California Polytechnic State University, USA)
Linda Vanasupa (California Polytechnic State University, USA)
Lawrence Domingo (California Polytechnic State University, USA)
Kurt Colvin (California Polytechnic State University, USA)
Anurag Pande (California Polytechnic State University, USA)
Troy Kawahara (California Polytechnic State University, USA)
Lynne Slivovsky (California Polytechnic State University, USA)
Steffen Peuker (California Polytechnic State University, USA)
James Widmann (California Polytechnic State University, USA)
Peter Schuster (California Polytechnic State University, USA)

F2H: Teaching and Learning Programming II

Chair: Ivan Mauricio Cabezas (Universidad de San Buenaventura, Colombia)

11:00 AM - 12:30 PM

Room: Rio Grande Room

TEACHING COMPUTER PROGRAMMING: PRACTICES, DIFFICULTIES AND OPPORTUNITIES

Sandra Milena Merchan Rubiano (Universidad El Bosque, Colombia)
Orlando López-Cruz (Universidad El Bosque, Colombia)
Esteban Gómez Soto (Universidad El Bosque, Colombia)

TEACHING-LEARNING METHODOLOGY FOR FORMAL LANGUAGES AND AUTOMATA THEORY

Gabriel Spadon de Souza (Universidade Estadual Paulista "Julio de Mesquita Filho", Brazil)
Celso Olivete Junior (Universidade Estadual Paulista "Julio de Mesquita Filho", Brazil)
Ronaldo Celso Messias Correia (Universidade Estadual Paulista "Julio de Mesquita Filho", Brazil)
Rogério Garcia (Universidade Estadual Paulista "Julio de Mesquita Filho", Brazil)

AN ONLINE INTRODUCTORY COMPUTER PROGRAMMING COURSE USING MATLAB: DESIGN STEPS AND WHAT TO EXPECT

Asad Azemi (Pennsylvania State University, Brandywine Campus, USA)

PROGRAMMING EDUCATION FOR PRIMARY SCHOOLCHILDREN USING A TEXTUAL PROGRAMMING LANGUAGE

Hidekuni Tsukamoto (Osaka University of Arts, Japan)
Yasuhiro Takemura (Osaka University of Arts, Japan)
Hideo Nagumo (Niigata Seiryō University, Japan)
Isamu Ikeda (Institute of Information Education Support, Japan)
Akito Monden (Okayama University, Japan)
Ken-ichi Matsumoto (Nara Institute of Science and Technology, Japan)

***A PROFICIENT HIGH LEVEL PROGRAMMING PROGRAM AS A WAY TO
OVERCOME UNEMPLOYMENT AMONG GRADUATES***

Maria José Marcelino (University of Coimbra, Portugal)

Bruno Cabral (University of Coimbra, Portugal)

Luis Paquete (University of Coimbra, Portugal)

António José Mendes (University of Coimbra, Portugal)

F2I: Design methods

Chair: Susan Donohue (University of Virginia, United States)

11:00 AM - 12:30 PM

Room: Santa Fe Room

***ENGINEERING UNIVERSITY-INDUSTRY PROJECTS:
A DESIGN FOR SIX SIGMA FRAMEWORK***

Bunmi Bababajide (Purdue University, USA)

Tamara J. Moore (Purdue University, USA)

***PERSPECTIVES ON ENGINEERING DESIGN LEARNING:
REALITIES, CHALLENGES, AND RECOMMENDATIONS***

Waddah Akili (Geotechnical Engineering, USA)

ADVANCING RESEARCH ON ENGINEERING DESIGN USING E-JOURNAL

Andreas Febrian (Utah State University, USA)

Oenardi Lawanto (Utah State University, USA)

Matthew Cromwell (Utah State University, USA)

USING ROBUST DESIGN AS A CONCEPTUAL FRAMEWORK TO UNDERSTAND EXPERTISE

Antonette Cummings (Purdue, USA)

Ali Shafaat (Purdue University, USA)

William Oakes (Purdue University, USA)

ESTABLISHING FUNCTIONAL CONCEPTS VITAL FOR DESIGN BY ANALOGY

Megan Tomko (Georgia Institute of Technology, USA)

Briana Lucero (Colorado School of Mines, USA)

Cameron Turner (Colorado School of Mines, USA)

Julie Linsey (Georgia Institute of Technology, USA)

F3A: Special Session: Is the Engineer of 2035 a Maker?

Chair: Neha Choudhary (Purdue University, USA)

2:30 PM - 4:00 PM

Room: Kohlberg Room

IS THE ENGINEER OF 2035 A MAKER?

Shawn Jordan (Arizona State University at the Polytechnic Campus, USA)

Micah Lande (Arizona State University at the Polytechnic Campus, USA)

F3B: Special Session: Agents for Change in Engineering & Computer Science Education

Chair: Kevin Buffardi (California State University - Chico, United States)

2:30 PM - 4:00 PM

Room: Pancho Villa Room

SPECIAL SESSION: AGENTS FOR CHANGE IN ENGINEERING & COMPUTER SCIENCE EDUCATION

Rebecca Bates (Minnesota State University, Mankato, USA)

Lisa Benson (Clemson University, USA)

Alan Cheville (Bucknell University, USA)

Cynthia Finelli (University of Michigan, USA)

Jennifer Karlin (SD School of Mines and Technology, USA)

Susan M. Lord (University of San Diego, USA)

F3C: Using Robots in Teaching and Learning

Chair: Kevin Gary (Arizona State University, USA)

2:30 PM - 4:00 PM

Room: Angus Room

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN K-8 ROBOTICS TEAMS' COLLABORATIVE BEHAVIORS AND THEIR PERFORMANCE IN A ROBOTICS TOURNAMENT

Muhsin Menekse (University of Pittsburgh, USA)

Chris Schunn (University of Pittsburgh, USA)

Ross Higashi (University of Pittsburgh, USA)

Emily Baehr (University of Pittsburgh, USA)

EFFECTS OF REPORT-WRITING ON A MULTI-STAGE-EXPERIENCE EDUCATIONAL PROGRAM USING AN AUTONOMOUS MOBILE ROBOT

Shigeto Nakamura (National Institute of Technology, Nara College, Japan)

Takayuki Tamaki (National Institute of Technology, Nara College, Japan)

Yorihiko Yano (National Institute of Technology, Nara College, Japan)

Shigeki Nishida (National Institute of Technology, Nara College, Japan)

Kenichi Iida (National Institute of Technology, Nara College, Japan)

Hiroaki Ichii (National Institute of Technology, Nara College, Japan)

Yasuhiro Hayakawa (National Institute of Technology, Nara College, Japan)

Mitsuyoshi Shimaoka (National Institute of Technology, Nara College, Japan)

Yoshihiro Oshida (National Institute of Technology, Nara College, Japan)

Etsuko Ueda (Osaka Institute of Technology, Japan)

Takahiro Michishita (National Institute of Technology, Nara College, Japan)

Tomohito Sasayama (National Institute of Technology, Nara College, Japan)

Hirotsugu Shimada (National Institute of Technology, Nara College, Japan)

Hiroshi Fukuyama (CS-Wakita Co., Ltd., Japan)

INTEGRATION OF ROBOTIC ARM MANIPULATOR WITH COMPUTER VISION IN A PROJECT-BASED LEARNING ENVIRONMENT

Krystian Radlak (Silesian University of Technology, Poland)

Marcin Fojcik (Sogn og Fjordane University College, Norway)

PROGRAMMING DESIGN PROCESS: PROVIDING K-12 STUDENTS WITH A STRUCTURE TO ATTAIN PROGRAMMING GOALS

Krystal Corbett (Cyber Innovation Center, USA)

Natasha Nesiba (New Mexico State University, USA)

MICROMOUSE: AN AUTONOMOUS ROBOTIC VEHICLE INTERDISCIPLINARY ATTRACTION TO EDUCATION AND RESEARCH

Guillermo Lopez-Cardalda (University of Puerto Rico-Mayagüez, Puerto Rico)
Daniel Ramos (University of Puerto Rico-Mayagüez, Puerto Rico)
Kevin Rivera (University of Puerto Rico-Mayagüez, Puerto Rico)
Kelvin del Valle (University of Puerto Rico-Mayagüez, Puerto Rico)
Angel Rodriguez (University of Puerto Rico-Mayagüez, Puerto Rico)
Eduardo Ortiz-Rivera (University of Puerto Rico-Mayagüez, Puerto Rico)

F3D: Retention

Chair: Shaobo Huang (South Dakota School of Mines and Technology, United States)
2:30 PM - 4:00 PM
Room: Brahma Room

FINDING COMPETENCE CHARACTERISTICS AMONG FIRST SEMESTER STUDENTS IN COMPUTER SCIENCE

Daniela Zehetmeier (Munich University of Applied Sciences, Germany)
Axel Böttcher (Munich University of Applied Sciences, Germany)
Anne Brüggemann-Klein (Technisch Universität München, Germany)
Veronika Thurner (Munich University of Applied Sciences, Germany)
Kathrin Schlierkamp (Munich University of Applied Sciences, Germany)

WHAT IS THE EFFECT OF ESTABLISHING PROGRAMS THAT ADDRESS SENSE OF BELONGING ON UNDERGRADUATE ENGINEERING RETENTION?

Eugene Judson (Arizona State University, USA)
John Erzen (Arizona State University, USA)
Ying-Chih Chen (Arizona State University, USA)
Stephen Krause (Arizona State University, USA)
James Middleton (Arizona State University, USA)
Robert Culbertson (Arizona State University, USA)

GRIT FOR ENGINEERING STUDENTS

Dong San Choi (University of Illinois at Urbana-Champaign, USA)
Michael C. Loui (Purdue University, USA)

MEASURING STUDENT INTEGRATION AND INSTITUTIONAL SUPPORT

Walter C. Lee (Virginia Tech, USA)
Holly Matusovich (Virginia Tech, USA)

RECRUITING, RETAINING AND TRANSITIONING COMPUTING UNDERGRADUATES THE STAIRSTEP WAY

Peggy Doerschuk (Lamar University, USA)
Judith Mann (Lamar University, USA)

F3E: Design Education II

Chair: Jay R Porter (Texas A&M University, United States)
2:30 PM - 4:00 PM
Room: Charolais Room

A COURSE IN INNOVATIVE PRODUCT DESIGN: A COLLABORATION BETWEEN ARCHITECTURE, BUSINESS, AND ENGINEERING

Jay Porter (Texas A&M University, USA)
Joseph Morgan (Texas A&M University, USA)
Richard Lester (Texas A&M University, USA)
Adam Steele (Texas A&M University, USA)
Jorge Vanegas (Texas A&M University, USA)
Rodney Hill (Texas A&M University, USA)

ASSESSING IDEA FLUENCY THROUGH THE STUDENT DESIGN PROCESS

Molly Hathaway Goldstein (Purdue University, USA)
Şenay Purzer (Purdue University, USA)
Camilo Vieira Mejia (Purdue University, USA)
Mitch Zielinski (Purdue University, USA)
K. Anna Douglas (Purdue University, USA)

ENGINEERING DESIGN JOURNEY AND PROJECT MANAGEMENT

Oenardi Lawanto (Utah State University, USA)
Matthew Cromwell (Utah State University, USA)
Andreas Febrian (Utah State University, USA)

LIFE-BASED DESIGN AS AN EXTENSION OF PROBLEM-BASED LEARNING - A TOOL FOR UNDERSTANDING PEOPLE AND TECHNOLOGY

Rebekah Rousi (University of Jyväskylä, Finland)
Jaana Leikas (VTT Technical Research Centre of Finland Ltd, Finland)

A SPIRAL CURRICULUM IN DESIGN AND PROJECT MANAGEMENT

Chris Venters (East Carolina University, USA)
John Reis (East Carolina University, USA)
Hayden Griffin (East Carolina University, USA)
Gene Dixon (East Carolina University, USA)

F3F: Social Responsibility and Ethics

Chair: Wilkistar Otieno (University of Wisconsin-Milwaukee, United States)

2:30 PM - 4:00 PM

Room: Longhorn Room

UNDERSTANDING AND IMPROVING THE CULTURE OF HACKATHONS: THINK GLOBAL HACK LOCAL

Adrienne Decker (Rochester Institute of Technology, USA)
Kurt Eiselt (University of British Columbia, Canada)
Kimberly Voll (Roadhouse Interactive Ltd. And Centre for Digital Media, Canada)

CHARACTERISTICS OF ENGINEERING FACULTY ENGAGED IN THE SCHOLARSHIP OF TEACHING AND LEARNING

Angela Bielefeldt (University of Colorado Boulder, USA)

USING SOCIAL NETWORK THEORY TO ELUCIDATE THE IMPACT OF DIVERSITY ON THE SOCIAL PROCESSES IN DESIGN

David Torres (Purdue University, USA)
Carla Zoltowski (Purdue University, USA)
Patrice Buzzanell (Purdue University, USA)
Megan Kenny Feister (Purdue University, USA)
William Oakes (Purdue University, USA)

A SITUATED LEARNING ETHICS INSTRUCTION MODEL FOR ENGINEERING UNDERGRADUATE STUDENTS

Wilkistar Otieno (Department of Industrial and Manufacturing Engineering, USA)
Nisha Kumar (College of Letters and Science, USA)

HOW ENGINEERING STUDENTS DEFINE 'SOCIAL RESPONSIBILITY'

Nathan Canney (Seattle University, USA)
Mikhail Russu (Seattle University, USA)
Angela Bielefeldt (University of Colorado Boulder, USA)

F3G: Faculty Development II

Chair: Jeffrey E Froyd (Texas A&M University, United States)

2:30 PM - 4:00 PM

Room: Hereford Room

STAGES AND PROCESSES OF PEDAGOGICAL CHANGE - AN APPLICATION OF TTM

James Pembridge (Embry-Riddle Aeronautical University, USA)

Kari Jordan (Embry-Riddle Aeronautical University, USA)

Heidi Steinhauer (Embry-Riddle Aeronautical University, USA)

Timothy Wilson (Embry-Riddle Aeronautical University, USA)

Douglas Holton (Embry-Riddle Aeronautical University, USA)

***ENGINEERING PH.D. STUDENTS' CAREER PREFERENCES:
LEVELS, CHANGES, AND THE ROLE OF ADVISORS***

Neha Choudhary (Purdue University, USA)

Brent Jesiek (Purdue University, USA)

TRACKING THE SPREAD OF RESEARCH-BASED INSTRUCTIONAL STRATEGIES

Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)

Irene Mena (University of Illinois at Urbana-Champaign, USA)

STRATEGIES FOR SUSTAINING CHANGE IN ENGINEERING EDUCATION

Sarah Hug (University of Colorado, Boulder, USA)

Heather Thiry (University of Colorado, Boulder, USA)

Ann Gates (University of Texas, El Paso, USA)

IMPROVING FACULTY PERCEPTION OF AND ENGAGEMENT IN STEM EDUCATION

Jonathan Miorelli (Colorado School of Mines, USA)

Nicholas Stambach (Colorado School of Mines, USA)

Barbara Moskal (Colorado School of Mines, USA)

Jerry Dwyer (Texas Tech University, USA)

F3H: Interdisciplinary Education in Programming

Chair: Laura R. Hanlan (Worcester Polytechnic Institute, USA)

2:30 PM - 4:00 PM

Room: Rio Grande Room

***USING FLIPPED CLASSROOM, PEER DISCUSSION, AND JUST-IN-TIME TEACHING
TO INCREASE LEARNING IN A PROGRAMMING COURSE***

Håkan Jonsson (Luleå University of Technology, Sweden)

LEARNING PROGRAMMING WITH PEER SUPPORT, GAMES, CHALLENGES AND SCRATCH

Roberto A Bittencourt (State University of Feira de Santana, Brazil)

David Moises dos Santos (State University of Feira de Santana, Brazil)

Carlos Rodrigues (State University of Feira de Santana, Brazil)

Washington Batista (State University of Feira de Santana, Brazil)

Henderson Chalegre (State University of Feira de Santana, Brazil)

APPLYING FLIPPED CLASSROOM AND PROBLEM-BASED LEARNING IN A CSI COURSE

Aracele Garcia de Oliveira Fassbinder (Federal Institute of Science and Technology - Campus Muzambinho, Brazil)

Tiago Gonçalves Botelho (Federal Institute of Science and Technology - Campus Muzambinho, Brazil)

Ricardo José Martins (Federal Institute of Science and Technology - Campus Muzambinho, Brazil)

Ellen Francine Barbosa (University of São Paulo, Brazil)

PROGRAMMING TEACHING IN HIGH SCHOOLS: AN ANALYSIS BASED ON THE DISCOURSE OF COLLECTIVE SUBJECT

Fernanda P. Mota (Federal University of Rio Grande, Brazil)
Diana F. Adamatti (Federal University of Rio Grande, Brazil)

WEBTA: AUTOMATED ITERATIVE CRITIQUE OF STUDENT PROGRAMMING ASSIGNMENTS

Leo Ureel, II (Michigan Technological University, USA)
Charles Wallace (Michigan Technological University, USA)

F3I: Embedded Systems Education I

Chair: Victor F. A. Barros (Science and Education Research Council, Portugal)
2:30 PM - 4:00 PM
Room: Santa Fe Room

RESEARCH ON SYSTEM LEVEL INNOVATIVE PRACTICE IN EMBEDDED LABORATORY EDUCATION

Ninghan Zheng (Tsinghua University, P.R. China)
Yongqiang Chen (Tsinghua University, P.R. China)
Pin Tao (Tsinghua University, P.R. China)

TEAM-BASED LEARNING COURSE DESIGN AND ASSESSMENT IN COMPUTER ENGINEERING

Mihir Awatramani (Iowa State University, USA)
Diane Rover (Iowa State University, USA)

FROM THE BROWSER TO THE REMOTE PHYSICAL LAB: PROGRAMMING CYBER-PHYSICAL SYSTEMS

Steffen Peter (University of California, Irvine, USA)
Farshad Momtaz (University of California, Irvine, USA)
Tony Givargis (University of California, Irvine, USA)

MOTIVATION AS A KEY FACTOR TO IMPROVE FRESHMEN ACADEMIC PERFORMANCE IN COMPUTER ENGINEERING COURSES

Lenin Lemus-Zúñiga (Universitat Politècnica de València, Spain)
Francisco Romero (Universitat Politècnica de València, Spain)
José-V. Benlloch-Dualde (Universitat Politècnica de València, Spain)

F4A: Special Session: Qualitative Research on Psychological Experience: A Starting Point for Using Interpretative Phenomenological Analysis

Chair: James Huff (Harding University, USA)
5:00 PM - 6:30 PM
Room: Kohlberg Room

QUALITATIVE RESEARCH ON PSYCHOLOGICAL EXPERIENCE: A STARTING POINT FOR USING INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS

James Huff (Harding University, USA)
Brent Jesiek (Purdue University, USA)
Carla Zoltowski (Purdue University, USA)
William Oakes (Purdue University, USA)
Joachim Walther (University of Georgia, USA)

F4B: Special Session: Aesthetics and Emotional Engagement: Why it Matters to Our Students, Why it Matters to Our Professions

Chair: Nathan Canney (Seattle University, USA)

5:00 PM - 6:30 PM

Room: Pancho Villa Room

AESTHETICS AND EMOTIONAL ENGAGEMENT: WHY IT MATTERS TO OUR STUDENTS, WHY IT MATTERS TO OUR PROFESSIONS

Jean Hertzberg (University of Colorado, Boulder, USA)

Katherine Goodman (University of Colorado, Boulder, USA)

F4C: Student-Centered Education I

Chair: Brian Rague (Weber State University, United States)

5:00 PM - 6:30 PM

Room: Angus Room

APPLYING PBL IN PROJECT MANAGEMENT EDUCATION: A CASE STUDY OF AN UNDERGRADUATE COURSE

Simone Santos (UFPE - Centro de Informática, Brazil)

Gustavo Alexandre (UFPE - Centro de Informática, Brazil)

Ariane Rodrigues (University of Pernambuco, Brazil)

MANAGING FIRST PBL EXPERIENCES: CROSS COMPETENCES IN A TRADITIONAL ENVIRONMENT

Jorge Martin-Gutierrez (Universidad de La Laguna, Spain)

Carlos Efrén Mora (Universidad de La Laguna, Spain)

Beatriz Añorbe-Díaz (Universidad de La Laguna, Spain)

M. Peña Fabiani Bendicho (Universidad de La Laguna, Spain)

Antonio Manuel González Marrero (Universidad de La Laguna, Spain)

Pedro Rivero Rodríguez (Universidad de La Laguna, Spain)

BEING A PBL TEACHER IN COMPUTER ENGINEERING: AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS

Cristiano Cintra (State University of Feira de Santana & Federal University of Bahia, Brazil)

Roberto A Bittencourt (State University of Feira de Santana, Brazil)

IS VIDEO FEEDBACK MORE EFFECTIVE THAN WRITTEN FEEDBACK?

Spencer Hilton (Weber State University, USA)

Brian Rague (Weber State University, USA)

NEW METHODOLOGY TO DIFFERENTIATE INSTRUCTIONAL STRATEGIES FOR ESL LEARNERS IN THE INDIAN CONTEXT

Rema Menon (Amrita University, India)

Prema Nedungadi (Amrita University, India)

F4D: K-12 Teacher Education and Computational Thinking

Chair: Charles Wallace (Michigan Technological University, United States)

5:00 PM - 6:30 PM

Room: Brahma Room

STARTING FROM SCRATCH: DEVELOPING A PRE-SERVICE TEACHER TRAINING PROGRAM IN COMPUTATIONAL THINKING

Nathan Bean (Kansas State University, USA)

Joshua Weese (Kansas State University, USA)

Russell Feldhausen (Kansas State University, USA)

Scott Bell (Northwest Missouri State University, USA)

***GK-12 DISSECT: INCORPORATING COMPUTATIONAL THINKING WITH
K-12 SCIENCE WITHOUT COMPUTER ACCESS***

R. Folk (New Mexico State University, USA)
G. Lee (New Mexico State University, USA)
A. Michalenko (New Mexico State University, USA)
A. Peel (New Mexico State University, USA)
E. Pontelli (New Mexico State University, USA)

COMPUTATIONAL THINKING AND IMPACTS ON K-12 SCIENCE EDUCATION

Ross J. Toedte (University of Tennessee, Knoxville, USA)
Mehmet Aydeniz (University of Tennessee, Knoxville, USA)

***DISSECT: AN EXPERIMENT IN INFUSING COMPUTATIONAL THINKING IN
A SIXTH GRADE CLASSROOM***

A. Peel (New Mexico State University, USA)
J. Fulton (New Mexico State University, USA)
E. Pontelli (New Mexico State University, USA)

***DISSECT: ANALYSIS OF PEDAGOGICAL TECHNIQUES TO INTEGRATE
COMPUTATIONAL THINKING INTO K-12 CURRICULA***

T. Burgett (New Mexico State University, USA)
R. Folk (New Mexico State University, USA)
J. Fulton (New Mexico State University, USA)
A. Peel (New Mexico State University, USA)
E. Pontelli (New Mexico State University, USA)
V. Szczepanski (New Mexico State University, USA)

F4E: K-12 Education III

Chair: Mary M Capraro (Texas A&M University, United States)

5:00 PM - 6:30 PM

Room: Charolais Room

YOUNG WOMEN IN COMPUTING: CREATING A SUCCESSFUL AND SUSTAINABLE PIPELINE

N. Nesiba (New Mexico State University, USA)
J. Dana-Farley (New Mexico State University, USA)
N. Muhyi (New Mexico State University, USA)
J. Chen (New Mexico State University, USA)
N. Ray (New Mexico State University, USA)
E. Pontelli (New Mexico State University, USA)

***A COMMUNITY OF PRACTICE TO DEVELOP, TEACH, AND DISSEMINATE LEARNING
IN ENGINEERING DESIGN***

Matthew Lammi (NC State University, USA)
Cameron Denson (NC State University, USA)
Nathan Stevens (NC State University, USA)

***TIES TO STEM: UNIVERSITY OUTREACH MODEL FOR TEACHERS IN K-12 STEM
SCHOOLS TO BE TRAINED IN ENGINEERING SKILLS***

Ramakrishnan Sundaram (Gannon University, USA)

***COMPARING STUDENTS' MATHEMATICS ACHIEVEMENT BY THEIR SCHOOL TYPES:
INCLUSIVE STEM SCHOOLS THAT IMPLEMENTED PLTW CURRICULUM WITH
INCLUSIVE STEM SCHOOLS THAT DID NOT IMPLEMENT PLTW***

Ali Bicer (Texas A&M University, USA)
Peter Boedeker (Texas A&M University, USA)
Mahati Kopparla (Texas A&M University, USA)
Robert M. Capraro (Texas A&M University, USA)
Mary Margaret Capraro (Texas A&M University, USA)

***ON THE DEVELOPMENT AND IMPLEMENTATION OF A PROJECT-BASED LEARNING
CURRICULUM FOR AIR QUALITY IN K-12 SCHOOLS***

Ashley Collier (University of Colorado, Boulder, USA)
Daniel Knight (University of Colorado, Boulder, USA)
Katya Hafich (University of Colorado, Boulder, USA)
Michael Hannigan (University of Colorado, Boulder, USA)
Madaline Polmear (University of Colorado, Boulder, USA)
Ben Graves (Delta School District 50, USA)

F4F: Design Education III

Chair: Deeksha Seth (Drexel University, USA)

5:00 PM - 6:30 PM

Room: Longhorn Room

***MEASURING UNDERGRADUATE STUDENTS' SELF-EFFICACY IN ENGINEERING
DESIGN IN A PROJECT-BASED DESIGN COURSE***

Deeksha Seth (Drexel University, USA)
James Tangorra (Drexel University, USA)
Ahmed Ibrahim (University of California, Riverside, USA)

THERE'S MORE THAN ONE WAY TO ANALYZE FEEDBACK ON DESIGN

Farshid Marbouti (Purdue University, USA)
Heidi Diefes-Dux (Purdue University, USA)
Monica Cardella (Purdue University, USA)

***EVALUATING CAPSTONE PROJECT THROUGH FLEXIBLE AND COLLABORATIVE
USE OF SCRUM FRAMEWORK***

Rafael Tomé de Souza (UFSCar - Federal University of São Carlos, Brazil)
Sergio D. Zorzo (UFSCar - Federal University of São Carlos, Brazil)
Daniele Aparecida da Silva (UFSCar - Federal University of São Carlos, Brazil)

***A SELF-ASSESSMENT INSTRUMENT TO ASSESS ENGINEERING STUDENTS'
SELF-DIRECTEDNESS IN INFORMATION LITERACY***

Kerrie Anna Douglas (Purdue University, USA)
Todd Fernandez (Purdue University, USA)
Şenay Purzer (Purdue University, USA)
Michael Fosmire (Purdue University, USA)
Amy Van Epps (Purdue University, USA)

F4G: Philosophy Of Engineering

Chair: Geoffrey Herman (University of Illinois at Urbana-Champaign, United States)

5:00 PM - 6:30 PM

Room: Hereford Room

IMPLICATIONS OF ANONYMOUS ASSESSMENT

Arnold Pears (Uppsala University, Sweden)
Aletta Nylén (Uppsala University, Sweden)

CASE FOR REFLECTION IN ENGINEERING EDUCATION--AND AN ALTERNATIVE

Mani Mina (Iowa State University, USA)
John Cowan (UK Open University, United Kingdom)
John Heywood (Trinity College Dublin, Ireland)

CHALLENGES IN FINDING A CONNECTION BETWEEN IL EDUCATION AND RESEARCH PROBLEM FORMULATION

Talikka Marja (Lappeenranta University of Technology, Finland)
Värri Hanna (Lappeenranta University of Technology, Finland)
Eskelinen Harri (Lappeenranta University of Technology, Finland)
Rimppi Heli (Lappeenranta University of Technology, Finland)

DRAFTING A CODE OF ETHICS FOR ENGINEERING EDUCATION

Alan Cheville (Bucknell University, USA)
John Heywood (Trinity College, Dublin, Ireland)

COMPETENCIES FOR PARADIGM SHIFT "SURVIVAL"

Mats Daniels (Uppsala University, Sweden)
Åsa Cajander (Uppsala University, Sweden)
Anna Eckerdal (Uppsala University, Sweden)
Mats Lind (Uppsala University, Sweden)
Aletta Nylén (Uppsala University, Sweden)
Tony Clear (Auckland University of Technology, New Zealand)
Roger McDermott (Robert Gordon University, United Kingdom)

F4H: Professional Skills

Chair: Abe Zeid (Northeastern University, United States)

5:00 PM - 6:30 PM

Room: Rio Grande Room

ADDRESSING THE PROBLEM OF MAL-EMPLOYMENT OF LIBERAL ARTS GRADUATES

Abe Zeid (Northeastern University, USA)
Chitra Javdekar (MassBay Community College, USA)
Marina Bograd (MassBay Community College, USA)
Susanne Steiger-Escobar (MassBay Community College, USA)
Shamsi Moussavi (MassBay Community College, USA)
Claire Duggan (Northeastern University, USA)
Daniel Sullivan (Northeastern University, USA)
Sagar Kamarthi (Northeastern University, USA)

IMPLIED IDENTITY: A CONCEPTUAL FRAMEWORK FOR EXPLORING ENGINEERING PROFESSIONAL IDENTITY PRACTICES IN HIGHER EDUCATION

Maryam Khosronejad (The University of Sydney, Australia)
Peter Reimann (The University of Sydney, Australia)
Lina Markauskaite (The University of Sydney, Australia)

CAMPUS TO CAREER, UNDERSTANDING HOW ENGINEERING STUDENT SKILL PERCEPTIONS LINK TO FUTURE CAREER PATHWAYS

Glenda Young (Virginia Tech, USA)
David Knight (Virginia Tech, USA)

F4I: Embedded Systems Education II

Chair: Firas Hassan (Ohio Northern University, USA)

5:00 PM - 6:30 PM

Room: Santa Fe Room

***MORE MISSING THE BOAT - ARDUINO, RASPBERRY PI, AND SMALL PROTOTYPING
BOARDS AND ENGINEERING EDUCATION NEEDS THEM***

Peter Jamieson (Miami University, USA)

Jeff Herdtner (Miami University, USA)

***DESIGN AND IMPLEMENTATION OF A MICROCONTROLLER BASED WORKSTATION WITH
EDUCATIONAL PURPOSES FOR THE CONTROL SYSTEMS AREA***

Juan Felipe Patarroyo (University of Puerto Rico at Mayaguez, Puerto Rico)

Gerson Beauchamp (University of Puerto Rico at Mayaguez, Puerto Rico)

Aidsa Santiago (University of Puerto Rico at Mayaguez, Puerto Rico)

***AUTONOMOUS ROBOT: AN INTELLECTUAL WAY OF INFUSING MICROCONTROLLER
FUNDAMENTALS INTO SOPHOMORE STUDENTS***

Chirag Parikh (Grand Valley State University, USA)

***DEVELOPMENT OF A NOVEL MODULAR INTEGRATED STACKABLE LAYER - ANALOG SYSTEM
ENVIRONMENT (MISL - ASE) PLATFORM FOR EMBEDDED SYSTEMS EDUCATION***

Gang Sun (Texas A&M University, USA)

Joseph Morgan (Texas A&M University, USA)

Jay Porter (Texas A&M University, USA)

Hester Yim (Texas A&M University, USA)

VAMONOS: EMBEDDABLE VISUALIZATIONS OF ADVANCED ALGORITHMS

Brent Carmer (Oregon State University, USA)

Mike Rosulek (Oregon State University, USA)

Saturday, October 24

SIA: Panel: International iCampus Forum (IC15) on "Smart Education in Smart Cities"

Chair: Jason Ng (British Telecom, United Kingdom)

9:00 AM - 10:30 AM

Room: Kohlberg Room

INTERNATIONAL ICAMPUS FORUM (IC15) ON "SMART EDUCATION IN SMART CITIES"

Jason Ng (United Arab Emirates, UAE)

***AN EXPLORATION INTO THE ATTITUDES OF YOUNG GIRLS TOWARD THE
FIELD OF COMPUTER SCIENCE***

JJ LaBouliere (SDSU, USA)

Amanda Pelloth (SDSU, USA)

Chiao-Ling Lu (SDSU, USA)

Jason Ng (Etisalat British Telecom Innovation Center, UAE)

***INTERACTION DRIVEN COMPOSITION OF STUDENT GROUPS FOR OPTIMAL
GROUPWORK LEARNING PERFORMANCE***

Ling Cen (Khalifa University of Science, Technology and Research, UAE)

Dymitr Ruta (Khalifa University of Science, Technology and Research, UAE)

Leigh Powell (Khalifa University of Science, Technology and Research, UAE)

Jason Ng (Khalifa University of Science, Technology and Research, UAE)

***EXPERIMENTAL DEVELOPMENT AND IMPLEMENTATION OF COMPUTER-BASED
QUIZ GAMES IN GENERAL CHEMISTRY FOR ENGINEERING***

S.S. Ling (Khalifa University of Science, Technology and Research, UAE)

F. Saffre (BT Research and Innovation, United Kingdom)

D.L. Gater (Khalifa University of Science, Technology and Research, UAE)

L. Bt. Halim (National University of Malaysia, Malaysia)

A. F. Isakovic (Khalifa Semiconductor Research Center, UAE)

SMART GROUPING TOOL PORTAL FOR COLLABORATIVE LEARNING

David M. Liu (Etisalat BT Innovation Center, UAE)

George Wesley Hitt (Khalifa University of Science, Technology and Research, UAE)

A. F. Isakovic (Khalifa University of Science, Technology and Research, UAE)

Di Wang (Etisalat BT Innovation Center, UAE)

Benjamin Hirsch (Etisalat BT Innovation Center, UAE)

Jason W.P. Ng (Etisalat BT Innovation Center, United Kingdom)

***SMART TEXT-CLASSIFICATION OF USER-GENERATED DATA IN EDUCATIONAL
SOCIAL NETWORKS***

Di Wang (Khalifa University, UAE)

Ahmed Al-Rubaie (Khalifa University, UAE)

Ahmed Al Dhanhane (Khalifa University, UAE)

Jason Ng (Khalifa University, United Kingdom)

SIB: New Approaches-Student-Center

Chair: Rangith Baby Kuriakose (University of Technology, South Africa)

9:00 AM - 10:30 AM

Room: Pancho Villa Room

A B-LEARNING NEW APPROACH APPLIED TO A PRACTICAL POWER ELECTRONICS CONVERTERS COURSE

Alfonso Lago Ferreiro (University of Vigo, Spain)

Andrés A. Nogueiras Meléndez (University of Vigo, Spain)

Ana María Cao-Paz (University of Vigo, Spain)

Jorge Marcos Acevedo (University of Vigo, Spain)

Manuel Castro (Spanish University for Distance Education (UNED), Spain)

INITIAL INVESTIGATION INTO ENGINEERING STUDENTS PROBLEM SOLVING WITHIN CONTROLS

Jessica Swenson (Tufts University, USA)

Ethan Danahy (Tufts University, USA)

William Messner (Tufts University, USA)

OPTIMAL CONTROL DESIGN AND IMPLEMENTATION FOR THE DOUBLE INVERTED PENDULUM SYSTEM IN A GRADUATE CONTROL COURSE

Felix Muñoz-Rodríguez (University of Puerto Rico at Mayagüez, Puerto Rico)

Gerson Beauchamp-Báez (University of Puerto Rico at Mayagüez, Puerto Rico)

Gerardo Cruz-Díaz (University of Puerto Rico at Mayagüez, Puerto Rico)

Juan Carlos Santos-Ferrer (University of Puerto Rico at Mayagüez, Puerto Rico)

A LOW-COST SYSTEM FOR EXPERIMENTS WITH DIGITAL CIRCUITS

Flávio H Toribio Destro (Federal University of Mato Grosso do Sul, Brazil)

Rafael A. Costa (Federal University of Mato Grosso do Sul, Brazil)

Fábio Iaione (Federal University of Mato Grosso do Sul, Brazil)

THE EXPLORATION FOR COMPUTER SYSTEM CAPACITY TRAINING IN EXPERIMENTAL TEACHING

Li Shan-shan (Tsinghua University, P.R. China)

Quan Cheng-bin (Tsinghua University, P.R. China)

Chen Yong-qiang (Tsinghua University, P.R. China)

SIC: Student Center Education

Chair: Brian Skromme (Arizona State University, United States)

9:00 AM - 10:30 AM

Room: Angus Room

HELPING UNDERGRADUATE ENGINEERING STUDENTS DISCOVER THEIR INTERESTS (AND REDUCE THEIR FEAR OF RESEARCH)

Mary Anderson-Rowland (Arizona State University, USA)

Armando Rodriguez (Arizona State University, USA)

Anita Grierson (Arizona State University, USA)

DEVELOPING AN ECOSYSTEM FOR STUDENT SUCCESS IN ENGINEERING IN RIO SOUTH TEXAS

Javier A. Kypuros (The University of Texas-Pan American, USA)

Stephen W. Crown (The University of Texas-Pan American, USA)

Arturo A. Fuentes (University of Texas-Pan American, USA)

Horacio Vasquez (The University of Texas-Pan American, USA)

Virgil Pierce (The University of Texas-Pan American, USA)

Jessica Lavariega Monforti (The University of Texas-Pan American, USA)

LEARNING TO LEARN: CREATING ENGINEERING CLASSROOMS FOR DEEP UNDERSTANDING

Sarah Hug (University of Colorado Boulder, USA)
Elsa Q. Villa (The University of Texas at El Paso, USA)
Peter Golding (University of Texas at El Paso, USA)
Gabby Gandara (University of Texas at El Paso, USA)

AGILE LEARNING THROUGH CONTINUOUS ASSESSMENT

Kevin A. Gary (Arizona State University, USA)
Suhas Xavier (Arizona State University, USA)

AMNESIA: A LEARNING OBJECT FOR MEMORY HIERARCHY TEACHING

Fernando Tiosso (University of São Paulo, Brazil)
Sarita Mazzini Bruschi (University of São Paulo, Brazil)
Paulo S. Souza (University of São Paulo, Brazil)
Ellen Barbosa (University of São Paulo, Brazil)
Carlos Emilio de Andrade Cacho (University of São Paulo, Brazil)

SID: Assessment I

Chair: Vladik Kreinovich (University of Texas at El Paso, United States)

9:00 AM - 10:30 AM

Room: Brahma Room

HOW SHOULD WE ESTIMATE A MISSING EXAM SCORE?

Michael C. Loui (Purdue University, USA)
Athena Lin (University of Illinois at Urbana-Champaign, USA)

HOW TO TAKE INTO ACCOUNT A STUDENT'S DEGREE OF CERTAINTY WHEN EVALUATING THE TEST RESULTS

Joe Lorkowski (University of Texas at El Paso, USA)
Olga Kosheleva (University of Texas at El Paso, USA)
Vladik Kreinovich (University of Texas at El Paso, USA)

THE ACADEMIC PERFORMANCE INDEX: CREATING A MORE ROBUST AND LESS BIASED MEASURE OF STUDENT ACADEMIC PERFORMANCE

Allison Godwin (Purdue University, USA)
Tyler D. Scott (Northwestern College, USA)
Geoff Potvin (Florida International University, USA)
Gerhard Sonnert (Harvard University, USA)
Phillip M. Sadler (Harvard University, USA)

EVALUATING METRICS FOR AUTOMATIC MIND MAP ASSESSMENT IN VARIOUS CLASSES

Amber Franklin (Miami University, USA)
Peter Jamieson (Miami University, USA)
Walter Vanderbush (Miami University, USA)
Tuo Li (Miami University, USA)
Julie Semlak (Miami University, USA)

SIE: First and Second Year Topics II

Chair: Frank Vahid (University of California, Riverside, USA)

9:00 AM - 10:30 AM

Room: Charolais Room

STUDENT LED CURRICULUM DEVELOPMENT AND INSTRUCTION OF INTRODUCTION TO ENGINEERING LEADERSHIP COURSE

America Fernandez (The University of Texas at El Paso, USA)

Erwin Delgado (The University of Texas at El Paso, USA)

Yazmin Montoya (The University of Texas at El Paso, USA)

Roger Gonzalez (The University of Texas at El Paso, USA)

Meagan Vaughan (The University of Texas at El Paso, USA)

ENHANCING THE EXPERIENCE OF FIRST-YEAR ENGINEERING STUDENTS WITH AN ENTRY-LEVEL STS COURSE: SCIENCE-TECHNOLOGY-SOCIETY

Jan DeWaters (Clarkson University, USA)

Jessica Halfacre (Clarkson University, USA)

John Moosbrugger (Clarkson University, USA)

Elisabeth Chapman (Clarkson University, USA)

Elisabeth Wultsch (Clarkson University, USA)

ASSESSING STUDENT VIEWS OF TRADITIONAL, FREE, AND INTERACTIVE MODIFICATIONS FOR AN INTRODUCTORY NETWORKING COURSE

Patrick Seeling (Central Michigan University, USA)

A PEDAGOGICAL MODEL FOR INTRODUCING 3D PRINTING TECHNOLOGY IN A FRESHMAN LEVEL COURSE BASED ON A CLASSIC INSTRUCTIONAL DESIGN THEORY

Pit Ho Patrio Chiu (City University of Hong Kong, Hong Kong)

King Wai Chiu Lai (City University of Hong Kong, Hong Kong)

Tsz Ki Frankie Fan (City University of Hong Kong, Hong Kong)

Suk Han Cheng (City University of Hong Kong, Hong Kong)

OUTCOMES OF ACCEPTING OR DECLINING ADVANCED PLACEMENT CALCULUS CREDIT

Karen De Urquidi (Purdue University, USA)

Dina Verdin (Purdue University, USA)

Stephen Hoffmann (Purdue University, USA)

Matthew W. Ohland (Purdue University, USA)

SIF: Online Assessment

Chair: Dazhi Yang (Boise State, United States)

9:00 AM - 10:30 AM

Room: Longhorn Room

TECEVAL: AN ON-LINE DYNAMIC EVALUATION SYSTEM FOR ENGINEERING COURSES AVAILABLE FOR WEB BROWSERS AND TABLETS

Jesus Jaquez (Tecnologico de Monterrey, Mexico)

Julietta Noguez (Tecnologico de Monterrey, Mexico)

Gerardo Aguilar-Sanchez (Tecnologico de Monterrey, Mexico)

Luis Neri (Tecnologico de Monterrey, Mexico)

Andres Gonzalez-Nucamendi (Tecnologico de Monterrey, Mexico)

SEED-PA. A PRACTICAL INSTRUMENT FOR ASSESSING INDIVIDUAL ETHICS INITIATIVES

Trevor S. Harding (California Polytechnic State University, USA)

Donald D. Carpenter (Lawrence Technological University, USA)

Janel A. Sutkus (Carnegie Mellon University, USA)

Cynthia J. Finelli (University of Michigan, USA)

AUTOMATIC FILL-THE-BLANK QUESTION GENERATOR FOR STUDENT SELF-ASSESSMENT

Girish Kumar (Agency for Science, Technology and Research, Singapore)

Rafael E. Banchs (Institute for Infocomm Research, Singapore)

Luis Fernando D'Haro (Institute for Infocomm Research, Singapore)

PLUGGABLE REPUTATION SYSTEMS FOR PEER REVIEW: A WEB-SERVICE APPROACH

Yang Song (North Carolina State University, USA)

Zhewei Hu (North Carolina State University, USA)

Edward Gehringer (North Carolina State University, USA)

ARCHITECTURAL SUPPORT FOR NON-EXPERT DEPLOYMENT OF REMOTE LABORATORIES

Khanh Nguyen (University of Sydney, Australia)

David Lowe (University of Sydney, Australia)

SIG: Innovative Curriculum & Course Design I

Chair: Venky Shankararaman (Singapore Management University, Singapore)

9:00 AM - 10:30 AM

Room: Hereford Room

STUDENT-CONSTRUCTED CONCEPT MAPS FOR ACTIVE LEARNING IN A FOUNDATIONAL UNDERGRADUATE ENGINEERING COURSE

Ning Fang (Utah State University, USA)

O-CHARTS: TOWARDS AN EFFECTIVE TOOLKIT FOR TEACHING TIME COMPLEXITY

Scott Barlowe (Western Carolina University, USA)

Andrew Scott (Western Carolina University, USA)

ANALYZING EDUCATIONAL COMMENTS FOR TOPICS AND SENTIMENTS: A TEXT ANALYTICS APPROACH

Gokarn Ila Nitin (Singapore Management University, Singapore)

Gottipati Swapna (Singapore Management University, Singapore)

Venky Shankararaman (Singapore Management University, Singapore)

PREPARING ECE STUDENTS FOR RESEARCH CAREER IN NANOTECHNOLOGY VIA TRACK PROGRAM

Maheer E. Rizkalla (Indiana University-Purdue University Indianapolis, USA)

Mangilal Agarwal (Indiana University-Purdue University Indianapolis, USA)

SIH: Innovative Curriculum & Course Design II

Chair: Wei-Fan Chen (Penn State University, United States)

9:00 AM - 10:30 AM

Room: Rio Grande Room

CURRICULUM DRIVEN CLASSROOM DESIGN

Kerry Milligan (Drexel University, USA)

Adam K. Fontecchio (Drexel University, USA)

RUBRICS FOR ASSESSMENT ITEM DIFFICULTY IN ENGINEERING COURSES

Shilpi Banerjee (International Institute of Information Technology, India)

N.J. Rao (International Institute of Information Technology, India)

Chandrashekar Ramanathan (International Institute of Information Technology, India)

***INSPIRING UNDERGRADUATE STUDENTS IN ENGINEERING LEARNING,
COMPREHENDING AND PRACTICING BY THE USE OF ANALOG DISCOVERY KITS***

Lei Zhang (University of Maryland Eastern Shore, USA)
Ibibia Dabipi (University of Maryland Eastern Shore, USA)
Yuanwei Jin (University of Maryland Eastern Shore, USA)
Payam Matin (University of Maryland Eastern Shore, USA)

TEACHING PROJECT MANAGEMENT USING A REAL-WORLD GROUP PROJECT

Lawrence Collingbourne (Victoria University of Wellington, New Zealand)
Winston K.G. Seah (Victoria University of Wellington, New Zealand)

***USING 3-D OPEN SOURCE SOFTWARE TO FACILITATE STUDENTS' SPATIAL
VISUALIZATION SKILLS***

Wei-Fan Chen (The Pennsylvania State University, USA)
Pao-Nan Chou (National University of Tainan, Taiwan)
Robert Carey (The Pennsylvania State University, USA)

SII: Faculty Development III

Chair: Megan Tomko (Georgia Institute of Technology, USA)

9:00 AM - 10:30 AM

Room: Santa Fe Room

***LEARNING ABOUT ENGINEERING EDUCATION RESEARCH: WHAT CONCEPTUAL
DIFFICULTIES STILL EXIST FOR A NEW GENERATION OF SCHOLARS?***

Ruth A. Streveler (Purdue University, USA)
Nicole P. Pitterson (Purdue University, USA)
Avneet Hira (Purdue University, USA)
Héctor Rodríguez-Simmonds (Purdue University, USA)
Juan Ortega Alvarez (Purdue University, USA)

***APPRENTICESHIP OF OBSERVATION: IMPLICATIONS FOR THE ADOPTION OF
EVIDENCE-BASED INSTRUCTIONAL PRACTICES***

Kari L. Jordan (Embry-Riddle Aeronautical University, USA)
James J. Pembridge (Embry-Riddle Aeronautical University, USA)
Heidi M. Steinhauer (Embry-Riddle Aeronautical University, USA)
Timothy Wilson (Embry-Riddle Aeronautical University, USA)
Douglas Holton (Embry-Riddle Aeronautical University, USA)

AMBIGUITY DURING ENGINEERING PROBLEM SOLVING

Elliot P. Douglas (University of Florida, USA)
Sevcan Agdas (University of Florida, USA)
Christine Lee (California State University East Bay, USA)
Mirka Koro-Ljungberg (Arizona State University, USA)
David J. Therriault (University of Florida, USA)

***BACKGROUND AND DEMOGRAPHIC FACTORS THAT INFLUENCE GRADUATION:
A COMPARISON OF SIX DIFFERENT TYPES OF MAJORS***

Sara Hahler (Louisiana Tech University, USA)
Marisa K. Orr (Louisiana Tech University, USA)

S2A: Technological Tools I

Chair: Jean Hertzberg (University of Colorado Boulder, USA)

11:00 AM - 12:30 PM

Room: Kohlberg Room

UNDERGRADUATE EXPERIMENTS WITH APERIODIC GRATINGS BASED ON THE FIBONACCI SEQUENCE

J.A. Monsoriu (Universitat Politècnica de València, Spain)

M.H. Giménez (Universitat Politècnica de Valencia, Spain)

E. Ballester (Universitat Politècnica de València, Spain)

L.M. Sanchez-Ruiz (Universitat Politècnica de València, Spain)

AN INTERACTIVE LEARNING ENVIRONMENT FOR ASSISTING STUDENTS IN SOLVING PROBLEMS ON DESIGNING OF LOGIC DIGITAL CIRCUITS BY USING MULTIPLE REPRESENTATIONS

Evandro de Barros Costa (University of Alagoas, Brazil)

Hemilis Joyse Barbosa Rocha (Federal Institute of Alagoas, Brazil)

ADAPTIVE VISION STUDIO - EDUCATIONAL TOOL FOR IMAGE PROCESSING LEARNING

Krystian Radlak (Silesian University of Technology, Poland)

Mariusz Frackiewicz (Silesian University of Technology, Poland)

Marek Szczepanski (Silesian University of Technology, Poland)

Michal Kawulok (Silesian University of Technology, Poland)

Michal Czardybon (Future Processing, Poland)

ANALYSIS OF OPPORTUNITIES AND CHALLENGES OF THE ELECTRONIC DUAL-BOARD IN INSTRUCTION

Li-ping Cai (Central China Normal University, P.R. China)

Rui-hua Shi (Central China Normal University, P.R. China)

Wen-yan Niu (Central China Normal University, P.R. China)

Ming-Wen Tong (Central China Normal University, P.R. China)

AESTHETICS AND EXPANDING PERCEPTION IN FLUID PHYSICS

Katherine Goodman (University of Colorado, USA)

Jean Hertzberg (University of Colorado, USA)

Noah Finkelstein (University of Colorado, USA)

S2B: Computer Based Learning

Chair: Rogério Garcia (São Paulo State University, Brazil)

11:00 AM - 12:30 PM

Room: Pancho Villa Room

STEP-BASED TUTORING SYSTEM FOR INTRODUCTORY LINEAR CIRCUIT ANALYSIS

B. J. Skromme (Arizona State University, USA)

P. J. Rayes (Arizona State University, USA)

B. E. McNamara (Arizona State University, USA)

V. Seetharam (Arizona State University, USA)

X. Gao (Arizona State University, USA)

T. Thompson (Arizona State University, USA)

X. Wang (Arizona State University, USA)

B. Cheng (Arizona State University, USA)

Y.-F. Huang (University of Notre Dame, USA)

D.H. Robinson (Colorado State University, USA)

IMPLEMENTATION OF AN INTELLIGENT TUTORING SYSTEM USING MOODLE

Vyshnavi Malathi Ramesh (International Institute of Information Technology, India)
N. J. Rao (International Institute of Information Technology, India)
Chandrashekar Ramanathan (International Institute of Information Technology, India)

A USER PROFILE DEFINITION IN CONTEXT OF RECOMMENDATION OF OPEN EDUCATIONAL RESOURCES. AN APPROACH BASED ON LINKED OPEN VOCABULARIES

Janneth Chicaiza (Universidad Técnica Particular de Loja, Ecuador)
Nelson Piedra (Universidad Técnica Particular de Loja, Ecuador)
Jorge Lopez-Vargas (Universidad Técnica Particular de Loja, Ecuador)
Edmundo Tovar-Caro (Universidad Politécnica de Madrid, Spain)

SUPPORTIVE ENVIRONMENT FOR TEACHING AND LEARNING DIGITAL IMAGE PROCESSING

Lenon Fachiano Silva (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)
Celso Olivete Júnior (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)
Pedro Henrique Reis (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)
Rafael Silva Santos (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)
Ronaldo Celso Messias Correia (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)
Rogério Eduardo Garcia (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)

ADAPTATION RESOURCES IN VIRTUAL LEARNING ENVIRONMENTS UNDER CONSTRUCTIVIST APPROACH: A SYSTEMATIC REVIEW

Vitor Bremgartner (Federal University of Amazonas, Brazil)
José Magalhães, Netto (Federal University of Amazonas, Brazil)
Crediné Silva de Menezes (University of Rio Grande do Sul (UFRGS), Brazil)

S2C: Innovative Curriculum & Course Design III

Chair: Rebecca Reck (University of Illinois at Urbana-Champaign, United States)

11:00 AM - 12:30 PM

Room: Angus Room

BRIDGING THE DIVIDE:

STRATEGIES FOR COLLEGE TO CAREER READINESS IN COMPUTER SCIENCE

Wendy A Lawrence-Fowler (The University of Texas-Pan American, USA)
Laura M. Grabowski (University of Texas-Pan American, USA)
Christine F. Reilly (University of Texas-Pan American, USA)

THE INSTITUTIONAL ENVIRONMENT FOR STUDENT VETERANS IN ENGINEERING

Catherine E. Brawner (Research Triangle Educational Consultants, USA)
Catherine Mobley (Clemson University, USA)
Joyce Main (Purdue University, USA)
Susan M. Lord (University of San Diego, USA)
Michelle M. Camacho (University of San Diego, USA)

ASSESSING AN AFFORDABLE AND PORTABLE LABORATORY KIT IN AN UNDERGRADUATE CONTROL SYSTEMS COURSE

Rebecca M. Reck (University of Illinois at Urbana-Champaign, USA)
Ramavarapu S. Sreenivas (University of Illinois at Urbana-Champaign, USA)
Michael C. Loui (Purdue University, USA)

HANDS ON PROJECT EXPERIENCE IN A CORE CLASS FOCUSED ON SUSTAINABILITY

Anoop Desai (Georgia Southern University, USA)

S2D: Curriculum Design III

Chair: Rebecca Reck (University of Illinois at Urbana-Champaign, USA)

11:00 AM - 12:30 PM

Room: Brahma Room

***BIOINFORMATICS CURRICULUM DEVELOPMENT
AND SKILL SETS FOR BIOINFORMATICIANS***

Huanmei Wu (School of Informatics and Computing, USA)

Amritha Palani (School of Informatics and Computing, USA)

STUDENTS LEARN MORE WITH LESS TEXT THAT COVERS THE SAME CORE TOPICS

Alex Edgcomb (University of California, Riverside, USA)

Frank Vahid (University of California, Riverside, USA)

Roman Lysecky (University of Arizona, USA)

VIRTUAL LABORATORY PLATFORM FOR COMPUTER SCIENCE CURRICULA

Yuan Yuan Li (Central South University, P.R. China)

Lei Xiao (Central South University, P.R. China)

Yu Sheng (Central South University, P.R. China)

CLOUD-BASED TEACHING IN AN ENGINEERING-PHYSICS COURSE

John M. Long (Deakin University, Australia)

***AN AUTOMATION OF THE COURSE DESIGN BASED ON MATHEMATICAL
MODELING AND GENETIC ALGORITHMS***

Alexey Dukhanov (ITMO University, Russia)

Maria Karpova (ITMO University, Russia)

Vadim Shmelev (ITMO University, Russia)

S2E: Innovative Curriculum & Course Design IV

Chair: Brian Faulkner (University of Illinois, USA)

11:00 AM - 12:30 PM

Room: Charolais Room

***STUDENTS OF ENGINEERING ON BEHALF OF PEOPLE WITH DISABILITIES:
EVALUATING THE IMPACT OF AN INSTITUTION'S FLAGSHIP PROJECT***

Orna Muller (ORT Braude College of Engineering, Israel)

Noga Shalit (ORT Braude College of Engineering, Israel)

Orit Braun Benyamin (ORT Braude College of Engineering, Israel)

***ENHANCING THE EDUCATIONAL EXPERIENCE FOR DEAF AND HARD OF HEARING
STUDENTS IN SOFTWARE ENGINEERING***

Daniel E. Krutz (Rochester Institute of Technology, USA)

Samuel A. Malachowsky (Rochester Institute of Technology, USA)

Scott D. Jones (Rochester Institute of Technology, USA)

Jayne A. Kaplan (St. Mary's School for the Deaf, USA)

***GETTING THE ATTENTION OF UNDERREPRESENTED MINORITY COMMUNITY
COLLEGE STUDENTS TO CONSIDER ENGINEERING AS A CAREER***

Mary R. Anderson-Rowland (Arizona State University, USA)

Armando A. Rodriguez (Arizona State University, USA)

Anita E. Grierson (Arizona State University, USA)

***EFFECT OF ASSERTION HEADINGS AND EXPANDABLE EXAMPLES IN AN ONLINE
ENGINEERING TEXTBOOK***

Brian Faulkner (University of Illinois at Urbana-Champaign, USA)

Geoffrey Herman (University of Illinois at Urbana-Champaign, USA)

S2F: K-12 Education III

Chair: Noah Salzman (Boise State University, United States)

11:00 AM - 12:30 PM

Room: Longhorn Room

STEM SUMMER CAMP FOLLOW UP STUDY: EFFECTS ON STUDENTS' SAT SCORES AND POSTSECONDARY MATRICULATION

Peter Boedeker (Texas A&M University, USA)

Ali Bicer (Texas A&M University, USA)

Robert M. Capraro (Texas A&M University, USA)

Mary Margaret Capraro (Texas A&M University, USA)

Jim Morgan (Texas A&M University, USA)

Luciana Barroso (Texas A&M University, USA)

NANOTECHNOLOGY STEM PROGRAM VIA RESEARCH EXPERIENCE FOR HIGH SCHOOL TEACHERS

Mangilal Agarwal (Indiana University-Purdue University Indianapolis, USA)

Qurat-ul-Ann Mirza (Indiana University-Purdue University Indianapolis, USA)

Joseph Bondi (Indiana University-Purdue University Indianapolis, USA)

Brandon Sorge (Indiana University-Purdue University Indianapolis, USA)

Maher Rizkalla (Indiana University-Purdue University Indianapolis, USA)

Richard Ward (Indiana University-Purdue University Indianapolis, USA)

Corbin Feldhaus (Charlestown High School, USA)

Amy Hinshaw (McKenzie Center for Innovation & Technology, Indianapolis, USA)

Kody Varahramyan (Indiana University-Purdue University Indianapolis, USA)

L.E.A.P.: LOCALIZED ENERGY AWARENESS PROGRAM THROUGH COLLABORATIVE K-UNIVERSITY STEM PROJECTS

Jamie Kennedy (Drexel University, USA)

Brandon Morton (Drexel University, USA)

Adam Fontecchio (Drexel University, USA)

USING COMMON ELEMENTS TO EXPLAIN ELECTROMAGNETISM TO CHILDREN: REMOTE LABORATORY OF ELECTROMAGNETIC CRANE

German Carro Fernandez (Spanish University for Distance Education - UNED, Spain)

Ramon Carrasco Borrego (Spanish University for Distance Education - UNED, Spain)

Elio Sancristobal Ruiz (Spanish University for Distance Education - UNED, Spain)

Manuel Castro Gil (Spanish University for Distance Education - UNED, Spain)

Francisco Mur Perez (Spanish University for Distance Education - UNED, Spain)

S2G: Online-distance Learning

Chair: Larry Richards (University of Virginia, USA)

11:00 AM - 12:30 PM

Room: Hereford Room

AN AGILE LEARNING DESIGN METHOD FOR OPEN EDUCATIONAL RESOURCES

Maurício Massaru Arimoto (University of São Paulo, Brazil)

Ellen Francine Barbosa (University of São Paulo, Brazil)

Leonor Barroca (The Open University, United Kingdom)

STUDENT-PERCEIVED EFFECTIVENESS OF ONLINE CONTENT DELIVERY MODES

Julie S. Mullen (Worcester Polytechnic Institute, USA)

John M. Sullivan, Jr (Worcester Polytechnic Institute, USA)

TOPIC BASED SEGMENTATION OF CLASSROOM VIDEOS

Tayfun Tuna (University of Houston, USA)
Mahima Joshi (University of Houston, USA)
Varun Varghese (University of Houston, USA)
Rucha Deshpande (University of Houston, USA)
Jaspal Subhlok (University of Houston, USA)
Rakesh Verma (University of Houston, USA)

MOTIVATING STUDENTS WITH NEW MECHANISMS OF ON-LINE ASSIGNMENTS AND EXAMINATION TO MEET THE MOOC CHALLENGES FOR PROGRAMMING

Xiaohong Su (Harbin Institute of Technology, P.R. China)
Tiantian Wang (Harbin Institute of Technology, P.R. China)
Jing Qiu (Harbin Institute of Technology, P.R. China)
Lingling Zhao (Harbin Institute of Technology, P.R. China)

SUPPORTING REAL OPEN EDUCATIONAL RESOURCES IN EDU-AREA

Manuel Caeiro-Rodríguez (Universidade de Vigo, Spain)
Martín Llamas-Nistal (Universidade de Vigo, Spain)
Manuel Fernández-Iglesias (Universidade de Vigo, Spain)
Fernando Mikic-Fonte (Universidade de Vigo, Spain)
Manuel Lama-Peñín (Universidade de Santiago de Compostela, Spain)

S2H: Assessment

Chair: Senay Purzer (Purdue University, USA)

11:00 AM - 12:30 PM

Room: Rio Grande Room

ON THE EFFECTIVENESS OF USING MIDTERM EXAMINATIONS STRICTLY FOR FORMATIVE FEEDBACK

Robert M. O'Connell (University of Missouri, USA)

AN ASSESSMENT ARCHITECTURE FOR COMPETENCY-BASED LEARNING: VERSION 1.0

Jeffrey J. Evans (Purdue University, USA)
Esteban Garcia (Purdue University, USA)
Michael Smith (Purdue University, USA)
Amy Van Epps (Purdue University, USA)
Michael Fosmire (Purdue University, USA)
Sorin Matei (Purdue University, USA)

SYSTEMS THINKING SKILLS OF UNDERGRADUATE ENGINEERING STUDENTS

Shaobo Huang (South Dakota School of Mines and Technology, USA)
Karim Heinz Muci-Kuchler (South Dakota School of Mines and Technology, USA)
Mark D. Bedillion (South Dakota School of Mines and Technology, USA)
Marius D. Ellingsen (South Dakota School of Mines and Technology, USA)
Cassandra M. Degen (South Dakota School of Mines and Technology, USA)

AN ANALYSIS OF THE PROVISION OF CONTEXT WITHIN EXISTING REMOTE LABORATORIES

Tania Machet (The University of Sydney, Australia)
David Lowe (The University of Sydney, Australia)

EVALUATION AND CONTINUOUS IMPROVEMENT IN A MULTIDISCIPLINARY S-STEM PROGRAM FOCUSING ON PROFESSIONAL SKILLS, GOALS & MENTORING

Robert H. Kinzel (Minnesota State University, Mankato, USA)
Jennifer Veltsos (Minnesota State University, Mankato, USA)
Rebecca A. Bates (Minnesota State University, Mankato, USA)
Rachel E. Cohen (Minnesota State University, Mankato, USA)
Winston Sealy (Minnesota State University, Mankato, USA)
Deborah K. Nykanen (Minnesota State University, Mankato, USA)

S2I: Innovative Curriculum & Course Design V

Chair: Dan Tappan (Eastern Washington University, USA)

11:00 AM - 12:30 PM

Room: Santa Fe Room

A COMPARATIVE ANALYSIS OF TWO GLOBALLY DISTRIBUTED GROUP PROJECTS: A PERSPECTIVE FROM CSCW/CSCL RESEARCH

Roger McDermott (Robert Gordon University, United Kingdom)
Mats Daniels (Uppsala University, Sweden)
Åsa Cajander (Uppsala University, Sweden)
Julian Bass (Robert Gordon University, United Kingdom)
JayPrakash Lalchandani (International Institute for Information Technology, India)

A QUASI-NETWORK-BASED FLY-BY-WIRE SIMULATION ARCHITECTURE FOR TEACHING SOFTWARE ENGINEERING

Dan Tappan (Eastern Washington University, USA)

PEER INSTRUCTION METHODOLOGY FOR LINEAR ALGEBRA SUBJECT: A CASE STUDY IN AN ENGINEERING COURSE

Katiuscia C. B. Teixeira (Federal University of Ceará, Brazil)
Thomaz E. V. Silva (Federal University of Ceará, Brazil)
Joao C. M. Mota (Federal University of Ceará, Brazil)
Natália C. Barroso (Federal University of Ceará, Brazil)
Eduardo V. O. Teixeira (Federal University of Ceará, Brazil)

AN INTEGRATED CURRICULUM FOR INTERNET OF THINGS: EXPERIENCE AND EVALUATION

Simon G. M. Koo (Jesuit Liberal Arts College, Hong Kong)

USING AN INTERACTIVE ANIMATED TOOL TO IMPROVE THE EFFECTIVENESS OF LEARNING CPU SCHEDULING ALGORITHMS

Sukanya Suranauwarat (National Institute of Development Administration (NIDA), Thailand)

S3A: Innovative Curriculum & Course Design VI

Chair: Paul B. Crilly (United States Coast Guard Academy, USA)

2:30 PM - 4:00 PM

Room: Kohlberg Room

ANOTHER PERSPECTIVE FOR LINEAR EQUATIONS, MATRICES AND THE TECHNOLOGICAL TOOLS IN LEARNING

Rogelio Palomera-Garcia (U. of Puerto Rico at Mayaguez, Puerto Rico)

HOW MANY POINTS SHOULD BE AWARDED FOR INTERACTIVE TEXTBOOK READING ASSIGNMENTS?

Alex Edgcomb (University of California, Riverside, USA, USA)
Frank Vahid (University of California, Riverside, USA, USA)

COMBINING MATLAB® SIMULATION WITH TELECOMMUNICATIONS INSTRUCTIONAL MODELING (TIMS™) IN A SENIOR LEVEL COMMUNICATIONS COURSE

Richard J. Hartnett (U.S. Coast Guard Academy, USA)

Paul B. Crilly (U.S. Coast Guard Academy, USA)

MORE THAN JUST RIGHT OR WRONG: USING CONCEPT QUESTIONS TO DISCERN STUDENTS' THINKING IN MECHANICS

Jeffrey L. Newcomer (Western Washington University, USA)

S3B: Global Programs

Chair: Joyce B. Main (Purdue University, United States)

2:30 PM - 4:00 PM

Room: Pancho Villa Room

ENTERPRISE ARCHITECTURE OF COLOMBIAN HIGHER EDUCATION

Ricardo Llamasa-Villalba (Industrial University of Santander, Colombia)

Dario J. Delgado Q. (Industrial University of Santander, Colombia)

Luz Torres Carreño (Industrial University of Santander, Colombia)

Andres Bueno Barajas (Industrial University of Santander, Colombia)

Ana M. Paéz Q. (Industrial University of Santander, Colombia)

Edgar Garcia Sneyder (Industrial University of Santander, Colombia)

EVIDENCE-BASED APPROACHES FOR ENGINEERING GLOBAL PREPAREDNESS PROGRAMMING: RESEARCH TO INFORM PRACTICE

Scott C. Streiner (University of Pittsburgh, USA)

Mary Besterfield-Sacre (University of Pittsburgh, USA)

EXAMINING HOW INTERNATIONAL EXPERIENCES PROMOTE GLOBAL COMPETENCY AMONG ENGINEERING GRADUATE STUDENTS

Lauren B. Denney (Purdue University, USA)

Matilde Sánchez-Peña (Purdue University, USA)

Joyce B. Main (Purdue University, USA)

A SEMESTER-LONG STUDY ABROAD MODEL FOR ENGINEERING STUDENTS - THE UNIFIED PROJECT APPROACH

John W. Dyer (The University of Oklahoma, USA)

Theresa M. Marks (The University of Oklahoma, USA)

Chris Ramseyer (The University of Oklahoma, USA)

James J. Sluss (The University of Oklahoma, USA)

P. Simin Pulat (The University of Oklahoma, USA)

Kirk Duclaux (The University of Oklahoma, USA)

S3C: Outreach & University, Community Collaborations

Chair: Natascha Trellinger (Purdue University, United States)

2:30 PM - 4:00 PM

Room: Angus Room

LEARNING PHILOSOPHIES: A GLIMPSE INTO STUDENTS' APPROACHES TO A LEARNING

Natascha M. Trellinger (Purdue University, USA)

Michael C. Loui (Purdue University, USA)

A BRIDGE TO ENGINEERING: A PERSONALIZED PRECALCULUS (BRIDGE) PROGRAM

Sandra B. Nite (Texas A&M University, USA)
G. Donald Allen (Texas A&M University, USA)
Michael Pilant (Texas A&M University, USA)
Robert M. Capraro (Texas A&M University, USA)
Mary M. Capraro (Texas A&M University, USA)
Jim Morgan (Charles Sturt University, USA)

FIRST IN THE FAMILY: A COMPARISON OF FIRST-GENERATION AND NON-FIRST-GENERATION ENGINEERING COLLEGE STUDENTS

Dina Verdin (Purdue University, USA)
Allison Godwin (Purdue University, USA)

EFFECTS OF PRE-COLLEGE ENGINEERING PARTICIPATION ON FIRST-YEAR ENGINEERING OUTCOMES

Noah Salzman (Boise State University, USA)
Matthew Ohland (Purdue University, USA)

S3D: First and Second Year Topics III

Chair: James Morris (Portland State University, USA)

2:30 PM - 4:00 PM

Room: Brahma Room

EARLY IDENTIFICATION OF AT-RISK STUDENTS IN A LOWER-LEVEL ENGINEERING GATEKEEPER COURSE

Horacio Vasquez (The University of Texas-Pan American, USA)
Arturo A. Fuentes (University of Texas-Pan American, USA)
Javier A. Kypuros (The University of Texas-Pan American, USA)
Mohammad Azarbayejani (The University of Texas-Pan American, USA)

ENGINEERING CURRICULUM READINESS: IMPLEMENTING AN ANALYTICAL AND COMMUNICATION SKILLS BUILDING COURSE FOR THE TECHNICAL DISCIPLINES

Barbara Christe (IUPUI, USA)
Alison Stevenson (IUPUI, USA)

GETTING PAST THE FIRST YEAR: RETAINING ENGINEERING MAJORS

A.E. Dreyfuss (NYC College of Technology, CUNY, USA)
Melanie Villatoro (NYC College of Technology, CUNY, USA)
Michael C. Loui (Purdue University, USA)
James E. Becvar (University of Texas El Paso, USA)
Geoffrey B. Saupe (University of Texas El Paso, USA)
Wayne Johnson (Mass Insight Global Partnerships, USA)

S3E: Student Interest

Chair: Linda P. DuHadway (Utah State University, USA)

2:30 PM - 4:00 PM

Room: Charolais Room

ARE THEY SIMPLY INTERESTED? AN EXPLORATION OF ENGINEERING STUDENTS' MOST FAVORITE CLASS

Dazhi Yang (Boise State University, USA)
Louis S. Nadelson (Utah State University, USA)
Kimberly Hardy (Boise State University, USA)

IS THIS "TRANSFER SHOCK"? EXAMINING THE PERCEPTIONS OF ENGINEERING STUDENTS WHO ARTICULATE WITHIN THE IRISH HIGHER EDUCATION CONTEXT

Susan O'Shaughnessy (Dublin Institute of Technology, Ireland)
Anne Marie McCarrick (Dublin Institute of Technology, Ireland)
Fionnuala Farrell (Dublin Institute of Technology, Ireland)
Una Beagon (Dublin Institute of Technology, Ireland)
Lance C. Pérez (University of Nebraska-Lincoln, USA)

WHATSAPP WITH LEARNING PREFERENCES?

Imelda Smit (North-West University, South Africa)

THE PUERTO RICO CUBESAT PROJECT TO ATTRACT STEM STUDENTS INTO THE AREA OF AEROSPACE ENGINEERING

Rachid Darbali-Zamora (University of Puerto Rico Mayagüez Campus, Puerto Rico)
Eduardo I. Ortiz-Rivera (University of Puerto Rico Mayagüez Campus, Puerto Rico)
Amilcar A. Rincon-Charris (Inter American University of Puerto Rico, Bayamon, Puerto Rico)

INFORMING CHANGE: COURSE CONTENT ANALYSIS AND ORGANIZATION

Linda P. DuHadway (Utah State University, USA)
Thomas C. Henderson (University of Utah, USA)

S3F: Student-Centered Education IV

Chair: Jose Aguilar (Universidad de Los Andes, Venezuela)

2:30 PM - 4:00 PM

Room: Longhorn Room

AUTOMATICALLY AUGMENTING LEARNING MATERIAL WITH PRACTICAL QUESTIONS TO INCREASE ITS RELEVANCE

Gaurav Kumar Singh (Tata Consultancy Services Limited, India)
Varun Kumar (Tata Consultancy Services Limited, India)
Savita Bhat (Tata Consultancy Services Limited, India)
Niranjan Pedanekar (Tata Consultancy Services Limited, India)

BLENDED LEARNING AT MATHS WITH AEROSPACE ENGINEERING FRESHMEN

N. Llobregat-Gómez (Universitat Politècnica de Valencia, Spain)
J.-A. Morano (Universitat Politècnica de València, Spain)
M.-D. Roselló (Universitat Politècnica de València, Spain)
L.M. Sánchez Ruiz (Universitat Politècnica de València, Spain)

SOUTH AFRICAN STUDENT PERCEPTIONS OF PRACTICAL LABORATORY WORK - A CASE STUDY FROM DIGITAL SYSTEMS 1

R.B. Kuriakose (Central University of Technology, South Africa)
A.J. Swart (Central University of Technology, South Africa)

CYBER-INFRASTRUCTURE SUPPORT FOR THE INTEGRATION AND ANALYSIS OF STUDENT SUCCESS DATA

Wai Yan Elsa Tai (University of Texas at El Paso, USA)
Ann Q. Gates (University of Texas at El Paso, USA)
Monika Akbar (University of Texas at El Paso, USA)

S3G: K-12 Education IV

Chair: DeLean Tolbert (Purdue University, USA)

2:30 PM - 4:00 PM

Room: Hereford Room

DEFINING MOMENTS: THE LINK BETWEEN DEFINITIONS OF TEACHING AND THE DESIRE TO TEACH

Yevgeniya V. Zastavker (Olin College of Engineering, USA)

Jeremy M. Goodman (Olin College of Engineering, USA)

Rebecca J. Christianson (Olin College of Engineering, USA)

INNOESCUELA, INNOVATION IN SECONDARY SCHOOL TECHNICAL STUDIES

Manuel Blazquez (Universidad A.de Nebrija, Spain)

Federico Baeza (Fundación Cotec para la Innovación Tecnológica, Spain)

Manuel Castro (Spanish University for Distance Education - UNED, Spain)

Elio Sancristobal (Spanish University for Distance Education - UNED, Spain)

Pablo Losada (Spanish University for Distance Education - UNED, Spain)

German Carro (Spanish University for Distance Education - UNED, Spain)

Salvador Ros (Spanish University for Distance Education - UNED, Spain)

Javier Garcia-Zubia (University of Deusto, Spain)

ARTS & BOTS: APPLICATION AND OUTCOMES OF A SECONDARY SCHOOL ROBOTICS PROGRAM

Jennifer L. Cross (Carnegie Mellon University, USA)

Emily Hamner (Carnegie Mellon University, USA)

Chris Bartley (Carnegie Mellon University, USA)

Illah Nourbakhsh (Carnegie Mellon University, USA)

VIRTUAL EXPERIMENTS FOR INTRODUCTION OF COMPUTING: USING VIRTUAL REALITY TECHNOLOGY

Fengxia Li (Beijing Institute of Technology, P.R. China)

Dongni Li (Beijing Institute of Technology, P.R. China)

Jun Zheng (Beijing Institute of Technology, P.R. China)

Sanyuan Zhao (Beijing Institute of Technology, P.R. China)

S3H: Innovative Curriculum & Course Design VII

Chair: Samuel A Malachowsky (Rochester Institute of Technology, United States)

2:30 PM - 4:00 PM

Room: Rio Grande Room

A NEW SIGNAL PROCESSING COURSE FOR DIGITAL CULTURE

Andreas Spanias (Arizona State University, USA)

Paul Curtis (Arizona State University, USA)

Photini Spanias (Arizona State University, USA)

Mahesh K. Banavar (Clarkson University, USA)

AN APPROACH TO IMPROVING STUDENT LEARNING OF CIVIL ENGINEERING CONCEPTS USING CASE STUDIES

Hudson Jackson (United States Coast Guard Academy, USA)

Corinna Fleischmann (United States Coast Guard Academy, USA)

Kassim Tarhini (United States Coast Guard Academy, USA)

A PROJECT COMPONENT IN A WEB ENGINEERING COURSE

Samuel A. Malachowsky (Rochester Institute of Technology, USA)

Daniel E. Krutz (Rochester Institute of Technology, USA)

***ANALYSIS OF THE UTILIZATION OF WEB 2.0 RESOURCES IN SECONDARY EDUCATION AND
ADVANCED VOCATIONAL TRAINING STUDIES***

Federico Banda-Sierra (Universidad Alfonso X El Sabio, Spain)

Antonio J. Reinoso (Universidad Alfonso X El Sabio, Spain)

Susana Reichardt (Universidad Alfonso X El Sabio, Spain)

AN INTELLIGENT STUDENT ADVISING SYSTEM USING COLLABORATIVE FILTERING

Kathiravelu Ganeshan (Unitec Institute of Technology, New Zealand)

Xiaosong Li (Unitec Institute of Technology, New Zealand)

S3I: Project-Based Learning

Chair: Stephen Frezza (Gannon University, USA)

2:30 PM - 4:00 PM

Room: Santa Fe Room

***CAMPUS INTEGRATED PROJECT-BASED LEARNING COURSE IN CIVIL
AND ENVIRONMENTAL ENGINEERING***

Jeffery Roesler (University of Illinois Urbana-Champaign, USA)

Paul Littleton (University of Illinois Urbana-Champaign, USA)

Arthur Schmidt (University of Illinois Urbana-Champaign, USA)

Lance Schideman (University of Illinois Urbana-Champaign, USA)

Morgan Johnston (University of Illinois Urbana-Champaign, USA)

Jose Mestre (University of Illinois Urbana-Champaign, USA)

Geoffrey Herman (University of Illinois Urbana-Champaign, USA)

Irene Mena (University of Illinois Urbana-Champaign, USA)

Emily Gates (University of Illinois Urbana-Champaign, USA)

Jason Morphew (University of Illinois Urbana-Champaign, USA)

Liang Liu (University of Illinois Urbana-Champaign, USA)

***USING MODERN PEDAGOGICAL TOOLS TO IMPROVE LEARNING
IN TECHNOLOGICAL CONTENTS***

Jose P. Queiroz-Neto (Federal Institute of Amazonas, Brazil)

Diego C. Sales (Federal Institute of Amazonas, Brazil)

Hayanne S. Pinheiro (Federal Institute of Amazonas, Brazil)

Benjamin O. Neto (Federal Institute of Amazonas, Brazil)

***EVALUATION OF STUDENT LEARNING OUTCOMES IN FOURTH YEAR ENGINEERING
MECHATRONICS THROUGH DESIGN BASED LEARNING CURRICULUM***

Sivachandran Chandrasekaran (Deakin University, Australia)

John M. Long (Deakin University, Australia)

Matthew A. Joordens (Deakin University, Australia)

S4B: Innovative Tools and Approaches

Chair: Efraín O'Neill-Carrillo (University of Puerto Rico-Mayaguez, Puerto Rico)

4:30 PM - 6:00 PM

Room: Pancho Villa Room

A BUSINESS INTELLIGENCE MODEL FOR ONLINE TUTORING PROCESS

Priscila Valdiviezo-Díaz (Universidad Técnica Particular de Loja, Ecuador)

Jorge Cordero (Universidad Técnica Particular de Loja, Ecuador)

Ruth Reátegui (Universidad Técnica Particular de Loja, Ecuador)

Jose Aguilar (Universidad Técnica Particular de Loja, Venezuela)

***DESIGN AND IMPACT OF A CLASSROOM INTERVENTION TO SUPPORT
TEAMING METACOGNITION***

Lee Rynearson (Purdue University, USA)

Morgan Hynes (Purdue University, USA)

***SEAMLESS CROSS-PLATFORM INTEGRATION OF EDUCATIONAL RESOURCES
FOR IMPROVED LEARNING EXPERIENCES***

Leonardo Favario (Politecnico di Torino, Italy)
Angelo Raffaele Meo (Politecnico di Torino, Italy)
Enrico Masala (Politecnico di Torino, Italy)

***ANALYSIS OF INTEGRATION OF REMOTE LABORATORIES FOR RENEWABLE
ENERGY COURSES AT JORDAN UNIVERSITIES***

Ll. Tobarra (Universidad Nacional de Educación a Distancia, Spain)
S. Ros (Universidad Nacional de Educación a Distancia, Spain)
R. Hernandez (Universidad Nacional de Educación a Distancia, Spain)
R. Pastor (Universidad Nacional de Educación a Distancia, Spain)
M. Castro (Universidad Nacional de Educación a Distancia, Spain)
A.Y.Al-Zoubi (Princess Sumaya University for Technology, Jordan)
B. Hammad (The Hashemite University, Jordan)
M. Dmour (University of Jordan, Jordan)
A. Robles-Gómez (Universidad Nacional de Educación a Distancia, Spain)
A.C. Caminero (Universidad Nacional de Educación a Distancia, Spain)

***A NOVEL, INTERNATIONAL MASTERS PROGRAM TO ADDRESS THE
SUSTAINABLE ENERGY CHALLENGE***

Efraín O'Neill-Carrillo (University of Puerto Rico-Mayagüez, Puerto Rico)
Agustín Irizarry-Rivera (University of Puerto Rico-Mayagüez, Puerto Rico)
Cristina Pomales-García (University of Puerto Rico-Mayagüez, Puerto Rico)
Emilio Contreras (University of APEC, Dominican Republic)

S4C: Non-Traditional Students

Chair: Maura Borrego (University of Texas at Austin, USA)

4:30 PM - 6:00 PM

Room: Angus Room

***SELF-REGULATED LEARNING IN TRANSFER STUDENTS:
A CASE STUDY OF NON-TRADITIONAL STUDENTS***

Sara Hooshangi (The George Washington University, USA)
Jonathan Willford (The George Washington University, USA)
Tara Behrend (The George Washington University, USA)

***TRANSFER STUDENT PATHWAYS TO ENGINEERING DEGREES:
A MULTI-INSTITUTIONAL STUDY BASED IN TEXAS***

Andrea M. Ogilvie (Virginia Tech, USA)
David B. Knight (Virginia Tech, USA)
Maura Borrego (The University of Texas at Austin, USA)
Arturo A. Fuentes (The University of Texas-Pan American, USA)
Patricia A. Nava (The University of Texas at El Paso, USA)
Valerie E. Taylor (Texas A&M University, USA)

***INFLUENCE OF PROFESSIONAL DEMOGRAPHICS ON FACULTY FEEDBACK
IN AN ASYNCHRONOUS, VIDEO-ANNOTATED PEER REVIEW (VAPR)***

James J. Pembridge (Embry-Riddle Aeronautical University, USA)
Yosef Allam (Embry-Riddle Aeronautical University, USA)
Lisa K. Davids (Embry-Riddle Aeronautical University, USA)

***PATHWAY, CHOICE OF MAJOR, AND PEER ECONOMIC STATUS OF
NONTRADITIONAL STUDENTS IN ENGINEERING***

Jacqueline C. McNeil (Purdue University, USA)
Matthew W. Ohland (Purdue University, USA)

***CULTURALLY SITUATED SURVEY OF ENGINEERING IDENTITY FOR
LATINA/O UNDERGRADUATES***

Renata A. Revelo (University of Illinois at Urbana-Champaign, USA)

S4D: Technological Tools II

Chair: Jaspal Subhlok (University of Houston, USA)

4:30 PM - 6:00 PM

Room: Brahma Room

TECHNOLOGICAL TOOLS TO LEARN CALCULUS

Gloria Patricia Pérez Gómez (Universidad EAFIT, Colombia)

Claudia Maria Zea Restrepo (Universidad EAFIT, Colombia)

Pedro Vicente Esteban Duarte (Universidad EAFIT, Colombia)

Luis Felipe Zapata Rivera (Universidad EAFIT, Colombia)

CONSTRUCT PEER ASSESSMENT INSTRUMENT USING EXISTING E-LEARNING TOOLS

Xiaosong Li (Unitec institute of technology, New Zealand)

***USE OF OPERATIONAL AMPLIFIERS AND DISCRETE OFF-THE-SHELF
COMPONENTS TO TEACH FUZZY LOGIC CONTROLLER CONCEPTS***

Nicolas Cobo-Yepes (University of Puerto Rico - Mayaguez Campus, Puerto Rico)

Rogelio Palomera-Garcia (University of Puerto Rico - Mayaguez Campus, Puerto Rico)

***USING AUDIO AMPLIFIER DISTORTION CHARACTERISTICS AS A PEDAGOGICAL
TOOL TO EXPLAIN SIGNAL PROCESSING THEORY***

Paul Crilly (U.S. Coast Guard Academy, USA)

Richard Hartnett (U.S. Coast Guard Academy, USA)

***A MIXED PEDAGOGICAL METHOD TO IMPROVE TEACHING AND LEARNING
IN BRAZILIAN COMPUTING AREA UNDERGRADUATE COURSES***

Alberto Lima (Federal University of Ceará, Brazil)

Wagner Andriola (Federal University of Ceará, Brazil)

Neuman de Souza (Federal University of Ceará, Brazil)

Thomaz E. V. da Silva (Federal University of Ceará, Brazil)

Zarathon L. Viana (Federal University of Ceará, Brazil)

S4E: Co-Ops and Early Career Training

Chair: Samantha Brunhaver (Arizona State University, United States)

4:30 PM - 6:00 PM

Room: Charolais Room

***MODELING STUDENT PERCEIVED COSTS AND BENEFITS TO COOPERATIVE
EDUCATION PROGRAMS (CO-OPS) AND PATHWAYS TO PARTICIPATION***

Beata Strubel (Purdue University, USA)

Joyce Main (Purdue University, USA)

Nichole Ramirez (Purdue University, USA)

Jake Davis (Purdue University, USA)

Matthew Ohland (Purdue University, USA)

***MAPPING CAREER SUCCESS COMPETENCIES TO ENGINEERING
LEADERSHIP CAPABILITIES***

Robyn Paul (University of Calgary, Canada)

Lynne Cowe Falls (University of Calgary, Canada)

PROFESSIONAL ENGINEERING PATHWAYS STUDY - A LONGITUDINAL STUDY OF EARLY CAREER PREPAREDNESS AND DECISION-MAKING

Samantha Brunhaver (Arizona State University, USA)
Cheryl Carrico (Virginia Tech, USA)
Holly Matusovich (Virginia Tech, USA)
Ruth Streveler (Purdue University, USA)
Peggy Boylan-Ashraf (Stanford University, USA)
Sheri Sheppard (Stanford University, USA)

ASSESSMENT OF A COOPERATIVE TRAINING COURSE USING FACULTY COURSE ASSESSMENT REPORT IN AN ABET ACCREDITED ENGINEERING TECHNOLOGY PROGRAM

Mohammed Mujahid Ulla Faiz (King Fahd University of Petroleum & Minerals, Saudi Arabia)
Mubarak Almutairi (King Fahd University of Petroleum & Minerals, Saudi Arabia)

S4F: Communication and Storytelling

Chair: Imelda Smit (North West University, South Africa)

4:30 PM - 6:00 PM

Room: Longhorn Room

IS THIS THING ON? DETERMINING COMFORT LEVEL WITH COMMUNICATION SKILLS IN A TECHNICAL DISCIPLINE

Adrienne Decker (Rochester Institute of Technology, USA)
Christopher A. Egert (Rochester Institute of Technology, USA)

FORMULATING THE PROBLEM: DIGITAL STORYTELLING AND THE DEVELOPMENT OF ENGINEERING PROCESS SKILLS

Tamara Ball (University of California, Santa Cruz, USA)
Linnea Beckett (University of California, Santa Cruz, USA)
Michael Isaacson (University of California, Santa Cruz, USA)

IS INFORMATION TECHNOLOGY GENERAL EDUCATION EFFECTIVE FOR NON-ENGINEERING MAJOR STUDENTS? AN EXPLORATORY STUDY ON ETHNICALLY CHINESE CLASSROOMS

Kai Pan Mark (BNU - HKBU United International College, Hong Kong)
Gary K. W. Wong (Hong Kong Institute of Education, Hong Kong)

LECTURE, NARRATED SLIDES, OR FIRST PERSON VIEW? IMPACT OF PRESENTATION ON LEARNING OUTCOMES

Michael P. McGarry (University of Texas at El Paso, USA)
Patrick Seeling (Central Michigan University, USA)

RAPID IMPROVEMENT OF STUDENTS' SOFT-SKILLS BASED ON AN AGILE-PROCESS APPROACH

Eduardo Valentin (Federal University of Amazonas, Brazil)
José Reginaldo Hughes Carvalho (Federal University of Amazonas, Brazil)
Raimundo Barreto (Federal University of Amazonas, Brazil)

S4G: Computing Education

Chair: David R Monismith, Jr. (Northwest Missouri State University, USA)

4:30 PM - 6:00 PM

Room: Hereford Room

NANOTECHNOLOGY: SIMULATION AND DESIGN

James E. Morris (Portland State University, USA)

INCORPORATING PARALLELISM AND HIGH PERFORMANCE COMPUTING INTO COMPUTER SCIENCE COURSES

David R. Monismith Jr. (Northwest Missouri State University, USA)

REPRESENTATION OF ABSTRACT CONCEPTS: DIFFERENCES ACROSS COMPUTING DISCIPLINES

Laura Benvenuti (Open Universiteit, The Netherlands)

C. F. (Nelleke) Louwe Kooijmans (Leiden Institute of Advanced Computer Science, The Netherlands)

Johan Versendaal (Open Universiteit, The Netherlands)

Gerrit C. van der Veer (Dalian Maritime University, P.R. China)

TEACHING AND LEARNING SOFTWARE PROJECT MANAGEMENT: A HANDS-ON APPROACH

Rogério Eduardo Garcia (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)

Ronaldo Celso Messias Correia (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)

Celso Olivete Junior (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)

Analice C. Brandi (Universidade Estadual Paulista "Júlio de Mesquita Filho", Brazil)

Jorge Marques Prates (Universidade Estadual de Mato Grosso de Sul, Brazil)

COMPUTATIONAL PLATFORM FOR THE EDUCATIONAL MODEL BASED ON THE CLOUD PARADIGM

Jose Aguilar (Universidad de Los Andes, Venezuela)

Karla Moreno (Universidad de Los Andes, Venezuela)

Ricardo Dos Santos (Universidad de Los Andes, Venezuela)

Junior Altamiranda (Universidad de Los Andes, Venezuela)

Domingo Hernandez (Universidad de Los Andes, Venezuela)

Jairo Fuentes (Universidad San Francisco de Paula Santander, Colombia)

Omar Portillo (Universidad de Pamplona, Colombia)

S4I: Innovative Curriculum & Course Design VIII

Chair: Chiu Choi (University of North Florida, United States)

4:30 PM - 6:00 PM

Room: Santa Fe Room

EXPERIENCE OF EXPERIMENTAL TEACHING AND MANAGEMENT BASED ON CLOUD COMPUTING

Jun Zhang (Dalian Maritime University, P.R. China)

Sheng Bi (Dalian Maritime University, P.R. China)

Xueyu Geng (Dalian Maritime University, P.R. China)

Xianping Fu (Dalian Maritime University, P.R. China)

TEACHING RESEARCH AND PRACTICE OF BLENDED LEARNING MODEL BASED ON COMPUTATIONAL THINKING

Ying Li (Beijing University, P.R. China)

Yu Liu (Beihang University, P.R. China)

Pan Shu (Beihang University, P.R. China)

BE A SIMULATOR DEVELOPER AND GO BEYOND IN COMPUTING ENGINEERING

Ricardo Ferreira (Universidade Federal de Vicosa, Brazil)

Jose Nacif (Universidade Federal de Vicosa, Brazil)

Salles Magalhaes (Universidade Federal de Vicosa, Brazil)

Thales de Almeida (Universidade Federal de Vicosa, Brazil)

Racys Pacifico (Universidade Federal de Vicosa, Brazil)

THE APPROACH TO DESIGN OF STEM COURSES' LEARNING RESOURCES BASED ON STUDENTS' ACTIVITY WITH THE USE OF SCIENTIFIC RESOURCES' DATABASES

Alexey Dukhanov (ITMO University, Russia)

Anna Bilyatdinova (ITMO University, Russia)

Klavdiya Bochenina (ITMO University, Russia)

Vladislav Karbovskii (ITMO University, Russia)

***COMPARING MICROCONTROLLER AND ANALOG METHODS FOR TRACKING
CONTROL EXPERIMENTS***

Chiu Choi (University of North Florida, USA)