



The American Society for Engineering Education



St. Lawrence Section

Current and Future Trends in Engineering and Engineering Technology Education



**SYRACUSE
UNIVERSITY**
**ENGINEERING
& COMPUTER
SCIENCE**

Syracuse University
April 17-18, 2015

Conference Program

Conference Program

Table of Contents

Exhibitors	3
Conference officials	4
Current Officers, ASEE St. Lawrence Section	5
Conference Information	6
Conference Schedule	7
Technical Session I	9
Technical Session II	10
Technical Session III	11
Poster Session	12
Notes	14
Campus Map	19

Special thanks to our major exhibitor and contributor, **USDidactic**, for their generous support of the 2015 ASEE St. Lawrence Section Conference.



Thanks also to **Allegheny Educational Systems Inc.**, **CADimensions Inc.**, and **HiTech Inc.**, the organizations and exhibitors, for their support of the 2015 ASEE St Lawrence Section Conference.



Conference Officials

Conference Chair:



Dr. Tomislav Bujanovic, Associate Professor
Department of Electrical Engineering & Computer Science
Syracuse University

Conference Co-chair:



Dr. Ilya Grinberg, Professor
Department of Engineering Technology
SUNY Buffalo State

Organizing Committee:



Dr. Kathryn Dimiduk, Director
Engineering Teaching Excellence Institute
Cornell University



Dr. Kris Schindler, Teaching Associate Professor
Department of Computer Science & Engineering
University at Buffalo



Dr. Shane Rogers, Associate Professor and Executive Officer
Department of Civil and Environmental Engineering
Clarkson University

Special Thanks to the Following Individuals for Their Assistance Organizing the Conference:

- **Dr. Hossein Ataei**, Syracuse University
- **Dr. Marjory Baruch**, Syracuse University
- **Ms. Cynthia Bromka-Skafidas**, Syracuse University
- **Dr. Katie Cadwell**, Syracuse University
- **Prof. Joan Dannenhoffer**, Syracuse University
- **Mr. Michael Frasciello**, Syracuse University
- **Dr. Julie Hasenwinkel**, Syracuse University
- **Ms. Denise Hendee**, Syracuse University
- **Mr. Ryan Milcarek**, Syracuse University
- **Ms. Maureen Marrano**, Syracuse University
- **Ms. Rebecca Noble**, Syracuse University

Current Officers, ASEE St. Lawrence Section

Chair:

Dr. Ilya Grinberg, Professor
Engineering Technology Department
SUNY Buffalo State
E-mail: grinbeiy@buffalostate.edu

Treasurer:

Dr. Kathryn Dimiduk, Director
Engineering Teaching Excellence Institute
Cornell University
E-mail: klc78@cornell.edu

Webmaster:

Dr. Kris Schindler, Teaching Associate Professor
Department of Computer Science And Engineering
University at Buffalo
E-mail: kds@buffalo.edu

Chair-Elect:

Dr. Tomislav Bujanovic, Associate Professor
Dept. of Electrical Engineering & Computer Science
Syracuse University
E-mail: tbujanov@syr.edu

Awards Committee Chair & Past-Chair:

Dr. Kris Schindler, Teaching Associate Professor
Department of Computer Science And Engineering
University at Buffalo, The State University of New York
E-mail: kds@buffalo.edu

Secretary:

Dr. Shane Rogers, Associate Professor
Department of Civil and Environmental Engineering
Clarkson University
E-mail: srogers@clarkson.edu

Conference Information

Track Themes

- Trends and Innovations in Engineering and Engineering Technology Education
- Increasing Student Interest in STEM Fields for Under-Represented Groups
- Experiential Learning (research, capstone design, laboratory, service learning, project teams)
- Engineering Education Beyond the Classroom: Internships, Coops, and Global Experiences
- Increasing Student Engagement
- Projects seeking collaborator

Conference Registration

Registration is required for all attendees and presenters. Badges are required for admission to all events. Registration fees include admission to the conference banquet and closing reception. Additional banquet tickets may be purchased for \$40 per person. Registration is \$10 for all students, but does not include the conference banquet. The student rate for the conference banquet is \$25 per person.

Registration Hours

The conference registration desk will be located at Syracuse University in the Heroy Geology Lab lobby and will be open during the following hours:

- Friday, April 17:** 1:00 p.m. – 5:00 p.m.
Saturday, April 18: 8:00 a.m. – 10:00 a.m.

Hotel Accommodations

Accommodations are available at the following hotel:

Sheraton Syracuse University Hotel & Conference Center (<http://www.sheratonsyracuse.com>)

(The special conference advance booking rate ended in mid-March after paper acceptance notifications were sent.)

Parking

Irving Garage Rate (on Irving Ave, close to Heroy Geology Lab): \$15 (all day)

Conference Proceedings

Conference proceedings will be published on the ASEE website (<https://www.asee.org>).

Social Functions

Pre-Banquet Cocktail Reception (cash bar)

Sheraton Syracuse University Hotel & Conference Center

Friday, April 17, 6:00 – 7:00 p.m.

Conference Banquet (included in registration fee; guests are \$40 per person; students are \$25 per person)

Sheraton Syracuse University Hotel & Conference Center

Friday, April 17, 7:00 – 9:00 p.m.

Closing Reception (included in registration fee; students are welcome to attend)

Heroy Geology Lab auditorium and lobby

Saturday, April 18, 3:00 – 4:00 p.m.

Syracuse University Art Center & Smart Grid Laboratory Tour

There will be a tour of Syracuse University Art Center and Smart Grid beginning at 3:00 p.m. on Friday, April 17. Attendees must register prior to their tour and are required to wear name badges.

Conference Schedule

Friday, April 17, 2015

- 12 p.m. to 2 p.m. Industry and Publishing exhibitors setup in Heroy Geology Lab - Lobby
 - Industry exhibitor presentation setup
 - Poster presentation setup

- 2 p.m. to 5 p.m. Heroy Geology Lab – Lobby
 - Participants arrival, registration, and refreshment
 - Poster session judges signing in
 - Fieldtrip to Skaneateles signing in
 - Dinner by the lake Skaneateles signing in (at your own cost)
 - PDH certificate request signing in
 - Poster presentation session
 - Industry exhibitor presentation
 - SU Art Gallery tour (Shaffer Art Building)
 - Smart Grid Lab tour (0041 Link Hall)

- 6 p.m. to 9 p.m. Banquet (Sheraton hotel)
 - 6 p.m. Cocktail cash-bar open for Socializing and Networking
 - 7 p.m. Dinner in Comstock
 - Welcome word: Prof. Mark Glauser
 - Guest speaker Prof. Tapan Sarkar: History of wireless

Saturday, April 18, 2015

- 8 a.m. Heroy Geology Lab - Auditorium
 - Section Business Meeting (open to ASEE St Lawrence Section members)

- 8:30 a.m. to 10 a.m. Heroy Geology Lab - Lobby
 - Breakfast
 - Participants registration
 - Poster presentation session
 - Industry and Publishing exhibition

- 10 a.m. to 11 a.m. Plenary session Heroy Geology Lab - Auditorium
 - Welcome word & opening talk: Prof. Kishan Mehrotra
 - Plenary speaker Prof. Cliff Davidson: Environmental challenges in 21st century

- 11 a.m. to 12 p.m. Oral presentations (parallel technical sessions)
 - 001 Crouse Hinds Hall: Technical Session I
 - 003 Crouse Hinds Hall: Technical Session II
 - 101 Crouse Hinds Hall: Technical Session III

- 12 p.m. to 1 p.m.
 - Lunch

- 1 p.m. to 3 p.m. Oral presentations (parallel technical sessions)
 - 001 Crouse Hinds Hall: Technical Session I
 - 003 Crouse Hinds Hall: Technical Session II
 - 101 Crouse Hinds Hall: Technical Session III

- 3 p.m. to 4 p.m. Closing ceremony Heroy Geology Lab – Auditorium & Lobby
 - Closing remarks (Auditorium)
 - ASEE St Lawrence Section Awards (Auditorium)
 - ASEE Announcements (Auditorium)
 - Ice cream social wrap up (Lobby)
 - Industry exhibitor presentation (Lobby)
 - Poster presentation (Lobby)

- 4 p.m.: Fieldtrip to Skaneateles (please register in advance and also indicate whether you would like to include dinner by the lake)

Technical Session I

Saturday, April 18, 2015, 11:00 a.m. – 3:00 p.m.

Crouse-Hinds Hall

Trends and Innovations in Engineering and Engineering Technology Education

Crouse-Hinds Hall, Room 001

Moderator: Joan Dannenhoffer

- 11:00** Development of certificate-focused MOOCs in engineering and technology: Factors to consider
Dr. John Earshen, Buffalo State College, earshejj@buffalostate.edu
- 11:20** A Modular, Flipped Classroom Approach for Teaching Applied Biomaterials, Rochester Institute of Technology
Dr. Kathleen Lamkin-Kennard, Rochester Institute of Technology, kaleme@rit.edu
- 11:40** Providing On-Line Access to State-of-the-Art Nanotechnology Instrumentation to STEM Programs
Dr. Elena Brewer & Anthony Dalessio, Erie Community College; brewer@ecc.edu

12:00 Lunch

Crouse-Hinds Hall, Room 001

Moderator: Michael White

- 1:00** The Nanotechnology Education at SUNY Poly
Dr. Iulian Gherasoiu, Daniel Jones, Digendra Das, Mohammed Abdallah, & Harry Efstathiadis, SUNY Polytechnic Institute, gherasi@sunyit.edu
- 1:20** Early Assessment of Student Understanding of Rate and Accumulation Processes: Development of Tools and Preliminary Results
Ms. Carli Flynn, Cliff Davidson, Helen Doerr, & Joan Dannenhoffer, Syracuse University, cflynn@syr.edu
- 1:40** A Novel Mixed-Methods Approach to Student Assessment and Validation of a Robot Teaching Tool
Dr. Abraham Howell, Abe Howell's Robotics, abe@abotics.com
- 2:00** Implementation of Studio-Style Collaborative Learning for Problem Solving in a Large Engineering Science Class
Ms. Pinqing Kan & Jacques Lewalle, Syracuse University, oral, jlewalle@syr.edu
pkan@syr.edu
- 2:20** Engaging K-12 Students in STEM Education Using Pneumatic "Air" Muscles
Dr. Kathleen Lamkin-Kennard & Anthony Henning, Rochester Institute of Technology, kaleme@rit.edu

Technical Session II

Saturday, April 18, 2015, 11:00 a.m. – 12:00 p.m.

Crouse-Hinds Hall

Project seeking collaborators

Crouse-Hinds Hall, Room 003 **Moderator:** Kathryn Dimiduk

11:00 Discussion of projects seeking collaborators
Opening remarks: Dr. Kathryn Dimiduk, klc78@cornell.edu

11:50 Discussion of potential collaborations between Community Colleges and 4 yr Colleges and Universities
Opening remarks: Dr. Kathryn Dimiduk, klc78@cornell.edu

12:00 Lunch

Saturday, April 18, 2015, 1:00 – 2:20 p.m.

Crouse-Hinds Hall

Increasing Student Interest in STEM Fields for Under-Represented Groups

Crouse-Hinds Hall, Room 003 **Moderator:** Kris Schindler

1:00 Performance of Scholars in the Transfer Pipeline (TiPi) Program
Dr. Surendra Gupta, James Moon, Michael Eastman, & Todd Dunn, Rochester Institute of Technology, skgeme@rit.edu

1:20 Project ENGAGE, A Summer Engineering Immersion Program for Middle School Girls
Ms. Carol Stokes-Cawley & Katie Cadwell, Syracuse University, cestokes@syr.edu

Sustainability and Engineering Education

Crouse-Hinds Hall, Room 003 **Moderator:** Kris Schindler

1:40 Sustainability Efforts on Alfred Campus
Prof. Xingwu Wang, Bruce Rosenthal, Casey Bush, Alfred University, & Jeff Porter, Middle Tennessee University, fwangx@alfred.edu

Trends and Innovations in Engineering and Engineering Technology Education

Crouse-Hinds Hall, Room 003 **Moderator:** Kris Schindler

2:00 Developing T-shaped Professional Energy Systems Engineers
Ryan Milcarek, Ryan Falkenstein-Smith, & Jeongmin Ahn, Syracuse University, rjmilcar@syr.edu

2:20 P16 Collaboration Model Promoting STEM Outreach along the Entire P16 Continuum
Dr. Kris Schindler, Allen Turton, Sue Wilson, Rebecca Wasmer, Department of Computer Science & Engineering, University at Buffalo, kds@buffalo.edu, aturton@aldenschools.org

Technical Session III

Saturday, April 18, 2015, 11:00 a.m. – 3:00 p.m.

Crouse-Hinds Hall

Experiential Learning (research, capstone design, laboratory, service learning, project teams)

Crouse-Hinds Hall, Room 101

Moderator: Michael Frasciello

11:00 The Technical Presentation Experience for Students

Prof. Stephanie Goldberg, Buffalo State College, goldbesr@buffalostate.edu

11:20 Statistical Proof that Capstone Class Improves Results in the World of Work

Prof. James Mallory & Dave Lawrence, Rochester Institute of Technology, jrmnet@ntid.rit.edu

11:40 Autonomous People Mover

Katie Knowles, Dr. Raymond Ptucha, Nick Bovee, Patrick Gelose, Duc Le, Keith Martin, Mollie Pressman, Jonathan Zimmermann, & Rick Lux, Rochester Institute of Technology, rwpeec@rit.edu

12:00 Lunch

Crouse-Hinds Hall, Room 101

Moderator: Shane Rogers

1:00 Magnetically Responsive Foam and its possible applications

Dr. Edward Purizhansky, Buffalo State College, purizhem@buffalostate.edu

1:20 Using a Project Approach to Create a Capstone Experience for Construction Management Students in Preparation for Professional Careers

Mr. Kenneth Tiss, SUNY College of Environmental Science and Forestry, ktiss@esf.edu

1:40 Scaling Up: The Design Competition as a Tool for Teaching Statics

Dr. Sinéad Mac Namara & Joan Dannenhoffer, Syracuse University, oral, scmacnam@syr.edu

2:00 Increasing Results on Certification Tests Integrating Multimedia Laboratories Engineering Science Class

Prof. James Mallory, Rochester Institute of Technology jrmnet@ntid.rit.edu

2:20 Reflection in Engineering Education

Dr. Shane Rogers, Clarkson University, srogers@clarkson.edu

Poster Session

Friday, April 17, 2015: 2:00 – 5:00 p.m.

Saturday, April 18, 2015: 8:30 a.m. – 10:00 a.m. & 3:00 p.m. – 4:00 p.m.

Heroy Geology Lab lobby

Helping First-year Engineering Students Understand the Manufacturing Process by Using 3D Printing Projects in Computer Aided Design Classes

Rachel Brown & Seong-Jin Lee, Alfred University, leesj@alfred.edu rrb10@alfred.edu

Introductory Renewable Energy Course for First-Year Prospective Engineering Students

Rachel Brown & Seong-Jin Lee, Alfred University, leesj@alfred.edu rrb10@alfred.edu

Dynamic Journal Bearing Loading System

Anthony DePina, Kevin Burnett, Molly Mariea, Michael Bush, Christina Amendola, William Nowak, & Jason Kolodziej, Rochester Institute of Technology cxa9135@rit.edu
michaelbush5@gmail.com

“CONTEMPORARY ISSUES IN ...”: A NEW COURSE ADDRESSING SEVERAL CURRICULAR CONCERNS

Steven Day & Robert Stevens, Rochester Institute of Technology, Steven.Day@RIT.edu

Energy Storage Devices for Integration in Smart Grid

Zachary Gallagher, Syracuse University, zsgallag@syr.edu

Power Grid Fault Detection in Noisy Environment Using PMU

Anirban Ganguli & Xiaoyu Guo, Syracuse University, agangu01@syr.edu, xguo09@syr.edu

Adaptive Frequency Estimation in Smart Grids

Jinnan Hussain & Peter Wolf Jean Philippe, Syracuse University, jmhussai@syr.edu,
wjjeanphi@syr.edu

Bidirectional Electric Vehicle Charger for Efficient Energy Management

McCleve Paul-Gerald Joseph & Danush Tumkur Ravishankar, Syracuse University,
mcjoseph@syr.edu,

Test Bed for a Cyber-Physical System Based on Integration of Advanced Power Laboratory and eXtensible Messaging and Presence Protocol

Matin Meskin, Ilya Grinberg, and William Miller, SUNY at Buffalo, matinmes@buffalo.edu

The Smart Grid: Operational, Privacy, Security, & Economic Issues

Sanjna Pawar & Arnav Kavadia, Syracuse University, spawar@syr.edu, akavadia@syr.edu,

Demand Side Optimization using a Load Shifting Algorithm

Asif Rahman & Gokul Gopakumar, Syracuse University, asifrah@syr.edu, ggopakum@syr.edu,

Future: Power Line Communication or Wireless

Morgan Taylor, Yasha Chaturvedi, & Pooja Shah, Syracuse University, tthom02@syr.edu,
ychaturv@syr.edu, pshah01@syr.edu

Bidirectional Charger Circuit and its Applications

Danush Tumkur Ravishankar & McCleve Paul-Gerald Joseph, Syracuse University,
dttumkur@syr.edu, mcjoseph@syr.edu,

A Technology Based Kinesthetic Interactive Learning System

Kris Schindler, Rebecca Wasmer, Nolan Foster, Melanie Phillips, Seth Karas, Dalton Barksdale, Stephen Chong, Jake Silas, Jacob Wende, Matthew Winnick, Mitchell Nguyen, Stephen Bass, June Hah, Zachary Salim, SUNY at Buffalo, kds@buffalo.edu, rrwasmer@buffalo.edu

The UB Talker: An Augmentative Communication Device

Kris Schindler, Daniel Filipiski, Alina Swierski, Sharia Huda, Zachary Salim, Olivia Spellicy, Megan Yeorg, Aravind Ramesh, KeyOnna Miller, Piyush Kathuria, Jennifer Barker, Lakshmi Ethiraj, SUNY at Buffalo, kds@buffalo.edu, alinaswi@buffalo.edu

Learning Through Innovation (Intelligent Tablet Cooling)

Crystal Vesneske, Nathaniel Kankiewitz, Nathan Koetz, & Jacob Leffler, Buffalo State College,
vesnesc01@mail.buffalostate.edu, kankien01@mail.buffalostate.edu

Observing the Power Grid by Real Time Frequency Data

Tian Wen & Kangping Li, Syracuse University, kli23@syr.edu, twen100@syr.edu

Signal Processing in the Electrification of Vehicular Transportation

Ji Yang & Tun Zhang, Syracuse University, jyang51@syr.edu, tuzhang@syr.edu

Demand Side Management in the Smart Grid

Yuan Yuan & Zhengyan Wang, Syracuse University, yyuan12@syr.edu, zwang46@syr.edu

The Design of a Transient-stable Microgrid Optimization Algorithm based on Droop Control

Lu Yue and Ilya Grinberg, SUNY at Buffalo, luyue@buffalo.edu

Syracuse University Campus Map

