

## 2014 ICTM-ISTS Math & Science Conference

Presented by the Iowa Council of Teachers of Mathematics and  
Iowa Academy of Science—Iowa Science Teaching Section

Scheman Center on ISU campus in Ames,

October 21-22, 2014



# IAS Corporate Members

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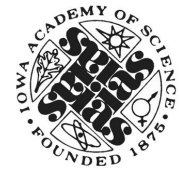
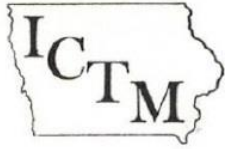
Thanks to our web page sponsor the **University of Northern Iowa Continuing Education and Special Programs.**

Thank-you to the **Ames Convention and Visitors Bureau** for all their support and effort on behalf of the ICTM / IAS-ISTS 2014 Fall Conference. Their help has been invaluable.



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Welcome to the  
**Iowa Council of Teachers of Mathematics and  
the Iowa Academy of Science  
—Iowa Science Teaching Section  
2014 Fall Conference**



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This conference is made possible through the generous support of corporate sponsors.  
Please join these sponsors promoting science and mathematics education in Iowa.

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## 2014 Corporate Sponsors

**Rockwell  
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**Rockwell Collins, Inc.** is recognized as a world-class provider of aviation and information technology for the government, the world's aircraft manufacturers, and more than 400 airline customers. Their innovation allows them to deliver powerful technologies today while designing solutions for tomorrow.

18 year sponsor

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## Presidential Awards for Excellence in Mathematics and Science Teaching



### The Presidential Award for Excellence in Mathematics and Science Teaching

(PAEMST) is the highest recognition that a kindergarten through 12th-grade mathematics or science teacher may receive for outstanding teaching in the United States. Enacted by Congress in 1983, this program authorizes the President to bestow up to 108 awards each year. The National Science Foundation administers PAEMST on behalf of the White House Office of Science and Technology Policy. This year, PAEMST is partnering with the Iowa Academy of Science to sponsor the recognition of Iowa's 2011 PAEMST Award winner and the 2012 nominees.

5 year sponsor



# Announcements

**Conference Registration & Check in for All Participants:**

**Wednesday, October 22, 7:30–11:00 a.m.**

## Exhibit Hall

**Wednesday 7:30 a.m.–4:00 p.m.  
Rolls and coffee compliments of PAESMT.**

**7:30 a.m.–10:00 a.m.  
Don't miss the Exhibitor Door Prize Drawing at 4:00!**

### Table of Contents

Our Corporate Sponsors .....	2–3
Welcome & Announcements.....	3–4
Find us online.....	4
Strands .....	5
Tuesday Evening Opportunities .....	6
Wednesday Overview.....	7
ISTS Keynote.....	8
ICTM Keynote .....	9
Concurrent Session 1.....8:30– 10:00 .....	10
Concurrent Session 2 ..10:00– 11:30 .....	11
Concurrent Session 3. 11:30– 12:00 .....	12
Concurrent Session 4 .....1:00– 1145 .....	12
Concurrent Session 5 .....2:15–3:00.....	12
Concurrent Session 6 .....3:15–4:00 .....	12
Exhibitor Door Prize Drawing .....	16
PAEMST awardees and nominees.....	17
Awards & Award Winners .....	18–22
Exhibitors .....	23–31
Conference Map .....	32

### Exhibitor Door Prize Check-off

Conference exhibitors have donated more than 50 prizes to be given away at the end of the conference. An Exhibitor Check-off Card is included in your registration packet. As you visit with an exhibitor, have the representative stamp a blank box on the card.

Fill at least 50% of the boxes by the end of the sessions on Friday to be eligible to win a door prize.

Submit your card at the Exhibit Hall before 4:00.

**You must be present to win.**

**Don't forget to follow ICTM and ISTS:**

**@iowamathteach**

**@iowasciteachers**

**www.iowamath.org**

**www.scienceiniowa.org**

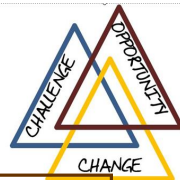
**More detailed descriptions are found at  
<http://www.ictm-ists-conference.info/>**

**STEMCafe computers  
are available on 2nd Floor.**



**#ictmlsts14**

# Strands



## **Building a Strong Knowledge Base**

Whether in math or science, students must have a deep understanding of fundamental ideas in each discipline. What are some of the best practices teachers use to do this? How are decisions made regarding what foundational knowledge is taught and how are students interacting with that new knowledge?

## **Argumentation in Math & Science Classrooms**

In both the Standards of Mathematical Practices and Next Generation Science Standards, students are asked to reason and make arguments. How does this look in a classroom? What strategies and activities are teachers using to provide opportunities to students to "argue" in class?

## **STEM Education Re-Imagined**

What are some of the breakthrough approaches to learning science, math, engineering and technology that can be connected to real world projects that engage and inspire students? How is STEM being integrated into subject areas to add relevance through projects and problems that lead to student success?

## **STEM Professional Learning & Leadership**

The demand for high quality STEM teachers far outpaces traditional models of teacher professional development. What new approaches for supporting new and experienced teachers are being explored and implemented?

## **Math & Science: Finding the Overlap**

One of the most daunting challenges when implementing a STEM curriculum is to find opportunities for cross-curricular experiences. Where have you found the most meaningful overlap? How have you and your colleagues worked to design curricular experiences that help students see the overlap?

## **How to Support the Struggling Math & Science Student**

The Iowa Department of Education defines MTSS as an every-education decision-making framework of evidence-based practices in instruction and assessment that addresses the needs of all students starting in general education. Sessions in this strand will focus on promising practices and interventions that support all students.

## **TYPE OF PRESENTATION:**

**HANDS-ON WORKSHOP:** a presentation that provides everyone with a hands-on experience. Tables/Chairs are provided for participants.

**DEMONSTRATION:** a series of activities or experiments allowing only a limited participation by the audience. Chairs are provided for the participants.

**LECTURE:** a sharing of ideas, techniques, or research results with audience participation limited to questions. Chairs are provided for the participants.

**COMPUTER LAB SESSION:** a presentation that provides participants with the opportunity to work with software or other technology in a computer lab setting. Computer sessions may be limited.

**LEVELS:** Lower Elementary, Upper Elementary, Middle School, High School, College, Supervision/Administration, Pre-Service Teachers

**The Governor's STEM Advisory Council**, a cross-sectional body of professionals charged with invigorating the STEM education pipeline for Iowa, was assembled in September of 2011 to fulfill the goals of Executive Order #74, including "Work to dramatically increase students' interest and achievement in STEM subjects so they will have a greater opportunity to pursue STEM careers." The Iowa Mathematics & Science Education Partnership, a four year-old inter-university STEM collaborative, has been assigned to manage the programmatic and administrative functions of the new Council. The make-up, functions, ambitions, and actions of the Council are being determined at a swift pace through fall of 2011. The input of STEM education practitioners to the Council is vital to its mission.

Jeff Weld, Executive Director, Governor's STEM Advisory Council



# Tuesday Opportunities & Activities

## October 21, 2014

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### NSF Presidential Award for Excellence in Mathematics and Science Teaching Reception

Join us at the Center for Biorenewable Chemicals (CBiRC)  
Biorenewables atrium, Iowa State University  
for a reception in celebration of  
Iowa's 2013 winner of the  
Presidential Award for Excellence in Mathematics and Science Teaching  
hosted by Yvette McCulley, Iowa Dept of Ed

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When: October 21, 2014 from 6:00 to 9:00pm

Where: Center for Biorenewable Chemicals (CBiRC) Biorenewables Laboratory, Iowa State University

What: Join us for a semi-formal pre-conference event honoring Iowa's 2014 Science Nominees and 2013 Science Awardee of the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST). The evening will include tours of the newly completed Biorenewables Complex, a sit-down meal, and presentations by CBiRC researchers. The evening will take place in the beautiful 4-story atrium of the BRC and is sure to be a great start to our Fall Conference. We will conclude with a "Chair's Reception" to include an assortment of dessert items

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### AEA Science Consultant Meeting

By invitation 1:00pm to 4:00pm

Biorenewables Laboratory on the ISU campus, room 1140

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### ICTM Pre-Conference, Tuesday, October 21st. 5:45pm-9:00pm Scheman Center, Ames, Iowa

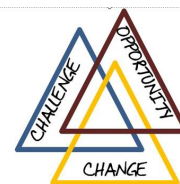
ICTM again will host a pre-conference for pre-service teachers in the state. You are invited to a special welcome session created just for new and future teachers.

- Snacks and beverages provided. Free teaching materials & ideas. Fun activities, fun people.
- Find out who's who in math education and how they can help you.  
Get an overview of the ICTM conference – the ins and outs of making.
- Network with other pre-service & beginning teachers.
- Find out about other future events for new teachers.

# Wednesday Opportunities

October 22, 2014

Scheman Center ISU



7:30–8:00 A.M.	Registration & On-site Registration coffee and pastry
8:00–8:15 A.M.	Welcome by ICTM & ISTS – Auditorium
8:30–10:00 A.M.	Session 1 - <b>Science Keynote: Fast Plants Program</b> Dan & Hedi Lauffer, UW Madison
8:30–9:15 A.M.	Breakout Session 1A Math Sessions
8:30–10:00 A.M.	Networking Conversations, STEM Lounge & Exhibit Hall time for Math teachers
10:00–11:30 A.M.	Session 2 - <b>Math Keynote: Enacting the Mathematical Practices in Every Classroom</b> Laurie Boswell (Classroom teacher and author)
10:00–10:45 A.M.	Breakout Session 2A Science Sessions
10:00–11:30 A.M.	Networking Conversations, STEM Lounge & Exhibit Hall time for Science teachers
11:30–12:00 A.M.	Breakout Session 3
12:00–1:00 P.M.	Luncheon Served Room 220 -230–240 <i>Lunch provided as part of your registration fee.</i>
12:15–12:35 P.M.	Burst Session A **
1:25–1:45 P.M.	Burst Session B **
1:00–1:45 P.M.	Breakout Session 4
1:45 P.M.--2:15 P.M.	Visit the Exhibit Hall and STEM Lounge , Networking time
2:15 P.M.--3:00 P.M.	Breakout Session 5
3:15 P.M. -4:00P.M.	Breakout Session 6
4:00 P.M.	Closing & Door Prizes (must be present to win)

**Times and rooms for individual breakout sessions in this program are subject to change.**





# ISTS Keynote & Meeting

## Benton Auditorium

8:30 A.M.— 10:00 A.M.

### Wisconsin Fast Plants Program

**Dan Lauffer** is the director of the research arm of the Wisconsin Fast Plants Program, the Rapid-cycling Brassica Research Collection. Over the last 20 years, he has worked to strengthen science education with school districts across the country and around the world through the Fast Plants Program. For six years, Lauffer directed the Science Immersion initiative within the national Math and Science partnership project called Systemwide Change for All Learners and Educators (SCALE), working with Los Angeles Unified, Denver, Madison, and Providence Rhode Island school districts and associated colleges to improve science teaching and learning. Lauffer's primary interests and expertise are in developing and refining seed stocks, creating innovative growing protocols, and refining tools and investigative strategies for using Fast Plants as a model organism in research and education. During his tenure with the Fast Plants Program, Lauffer has facilitated large collaborations among researchers and educators from all levels to design and implement innovative student-centered inquiries. This work included a global NASA-funded project in which Fast Plants were grown in space, while classrooms throughout the US and Ukraine conducted simultaneous experiments and communicated regularly with the astronauts. Lauffer earned his BS and MBA degrees from the University of Wisconsin-Madison. In addition to his work with the Wisconsin Fast Plants Program at UW-Madison, Lauffer was the Chief Operations Officer for the Great Lakes Bioenergy Research Center from 2008 to 2014.



**Hedi Lauffer** is the director of the Wisconsin Fast Plants Program at the University of Wisconsin-Madison. For more than 25 years, the Fast Plants Program has served researchers and educators across the nation and around the world, using the quick-growing Brassica plant developed by UW-Madison plant pathologist, Paul Williams. Starting in 2009, Lauffer directed the Program's curriculum and professional development and was appointed director in 2010 by its founder. For six years prior to joining the Fast Plants Program, Lauffer worked on a national Math and Science partnership project called Systemwide Change for All Learners and Educators (SCALE) developing and facilitating collaborative models for systemic science education reform and holistic approaches to professional development for teachers and science leaders. Previously, Hedi Lauffer was the co-chair of the Institute for Learning's Science Disciplinary Literacy Program at the University of Pittsburgh, following an appointment at Biological Sciences Curriculum Study (BSCS) as a Science Educator, Professional Development Associate, and Curriculum Developer. Lauffer taught high school science at Hartford Union High School in Wisconsin, earned National Board Certification in Adolescent and Young Adult Science, and was selected as the District's Teacher of the Year in 2000. Lauffer's PhD is from UW-Madison in Science Education and Learning Sciences; her research focuses on conceptual change and interactive learning environments for educators. Currently, Lauffer directs multiple projects through the Fast Plants Program, including a \$4.7 million, USDA-funded, collaborative project with the Sustainable Development Institute of the College of Menominee Nation to develop place-based and culturally-responsive approaches for science teaching and learning.

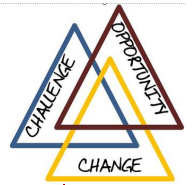


# ICTM Keynote & Meeting

## Benton Auditorium

10:00 A.M.—11:30 A.M.

### Enacting the Mathematical Practices in Every Classroom



#### Laurie Boswell

Head of School and a mathematics teacher at the Riverside School in Lyndonville, Vermont. Dr. Boswell is a recipient of the Presidential Award for Excellence in Mathematics Teaching and has taught mathematics to students at all levels, from elementary through college. Dr. Boswell was a Tandy Technology Scholar and served on the NCTM Board of Directors as well as NCSM and is a popular national speaker.



We have learned a great deal over the past twenty-five years about specific teaching practices that support students' learning of mathematics. Teacher content knowledge is important, and it is not enough. This session will focus on the Standards for Mathematical Practice—what students are doing as they learn mathematics, and the role of teachers—what effective teaching practices does research suggest will promote deep learning of mathematics.

Being a member of the Iowa Council of Teachers of Mathematics (ICTM) means you are a member of a professional organization that is working to promote and improve mathematics education in Iowa.

#### Benefits include:

- Annual ICTM conference discount
- ICTM yearly journal
- Tri-annual newsletters
- Discount on NCTM publications
- Grant opportunities
- Networking with other mathematics educators across the state
- Professional development component for Iowa Teaching Standards



Visit our booth in the exhibit hall or visit us online: [www.iowamath.org](http://www.iowamath.org)

Join today!

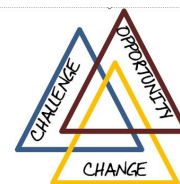


# Session 1 8:30 A.M.-9:15 A.M.

*For a detailed listing of all sessions, visit [ictm-ists-conference.info](http://ictm-ists-conference.info)*

Knowledge	Argument	STEM Ed	Ldrship	Overlap	Struggling	Commercial
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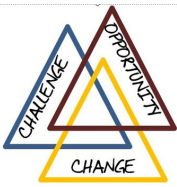
Rooms	Session 1 8:30 to 9:15am
150	Jim Strayer, Scholastic
154	Jane Owen, Explore Learning
158	Jennifer Pothast, Engaging in Research to Build Better Understanding of Elementary Math Topics
160	Mike Baker & Tracy Wingert, TI Inspire in the Math Classroom
167	Eric Hart, Engaging, Useful, and Fun Math for Social Decision Making As Related to Voting, Fair Division, and Game Theory
171	Milan Sherman, Using Technology to Support Students' Mathematical Thinking
175	Calvin & Rosemary Irons, Motivating and Mastering Mental Mathematics
179	Julia Jorgenson, Re-Imaging Education
<b>Auditorium</b>	<b>Science Keynote Hedi &amp; Dan Lauffer, Wisconsin Fast Plants</b>
204	Britney Bockstahler & Andrea Hogenson, Block Play Builds Foundational Geometry Understandings
208	Suzanne Riehl & Olof Steinthorsdottir, Proportional Reasoning: What are they thinking?
220	Kevin Schroeder, It's About Time
240	William Kearney, McGraw Hill Education - New Everyday Math 4 Overview
250	Vicki Hamdorf & Rick Spellerberg, HiMCM Co-Map Math Modeling Competition
252	Erin Marshall, Standards Based grading: Reassessments and Data Notebooks
254	Lori Mueller, Strategies for Teaching Addition and Subtraction
260	Valorie Zonnefeld, Rich Problem Solving Tasks
262	Jason Anderson & Josh Manning, How to Help Lower Level Students Gain Proficiency in Math
275	Brian Townsend, Find-A-Place! A Game That Focuses On Place Value
299	Barbara Rokahr, Mathematical Practices: When and Where?



# Session 2 10:00 A.M.-10:45 A.M.

*For a detailed listing of all sessions, visit [icm-ists-conference.info](http://icm-ists-conference.info)*

Rooms	Session 2 10:00 to 10:45am
150	Deb Kearney, Nutrients for Life
154	Kelsey Bies & Birgitta Meade, Yeasty Beasties: How are Microorganisms Affected by their Environment?
158	Ron DeArmond & Kristie Burns, Making Science Alive!
160	Dan Henderson, Curriculum Associates
167	DeAnna Tibben, HS Science Research Projects: Tips, Tricks & Resources
171	Christopher Like, Gamifying Science: Galaxy Fleet
175	Hallie Edgerly, Katie Borton, Kate Willems & Kim Timmerman, Making Grades Meaningful: Going Standards-based in a Traditional Grading System
179	
<b>Auditorium</b>	<b>Math Keynote Laurie Boswell Enacting the Mathematical Practices in Every Classroom</b>
204	Sarah Boesdorfer, Engineering Practices in Chemistry: It can be about Processes
208	Bob Watson, Water Sourcebook
250	Yvette McCulley, Science Matters
252	Leslie Flynn & Lori Ihrig, Fostering Inventiveness and Innovation in K-12 Students
254	Mike Blair, The Physics of Star Trek - Bad and What May be Good
260	Patricia Higby & Scott Greenhalgh, The Best of Both Worlds
262	Jon Markus, Margo Augustine & Kyle Heatherington, Biorenewables in Iowa: Did You Know???
275	Maureen Griffin & Craig Walter, Thinking Critically about using Document-based Case Studies to teach Critical Thinking Skills
299	Jerrid Kruse & Jesse Wilcox, Myths Regarding Teaching Science through Inquiry



# Session 3 11:30 A.M.-12:00 noon

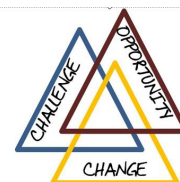
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Knowledge	Argument	STEM Ed	Ldrship	Overlap	Struggling	Commercial
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Rooms	Session 3 11:30am to Noon
150	Barb Rokhar, Pearson
154	Pam Martin & Julie Bechtel, Math & Science: Meaningful and Manageable Integration
158	Megan Balong, 5 Practices Supported by iPads in K/1
160	Dan Henderson, Curriculum Associates
167	Tami Plein, Integrating Science & Literacy
171	Jeannette Pillsbury & Marlon Henriquez, "Mathematical Practices": the Habits of "Doing Math"
175	Mason Kuhn, Meta-Sticks: Enhancing Classroom Negotiation through Student Evaluation of Evidence
179	Tiffany Scheuring & Melanie Andersen, Using Standards of Mathematical Practice to Increase Student Performance
Auditorium	Camille Schroeder, Being STEMtastic: Messaging STEM for All
204	Jaclyn Easter, What's Inside? - Connecting the Earth's Interior to the Nature of Science
208	Ryan Zonnefeld & Valorie Zonnefeld, Critical Thinking and High-Level Discourse: Teaching, Learning, and Professional Development in a 1:1 Environment
250	Barbara Ehlers & Julie Delaney, Environmental Issues Instruction: Energy Sources of the Prairie
252	Kristin Grotewold & Samantha Kuehl, Standards Based Reporting in the Middle School Math Classroom
254	Joanne Olson & Michael Clough, The Nature of Science for Elementary Students
260	Jordon & Hallie Edgerly Make Your Case: Creating Space for Effective Argumentation in the Classroom
262	Allison Jaycox & Jason Thompson, Classifying Aliens: Inquiry-based Activities for Teaching Evolution
275	Breanne Garrett & Lindsay Gardner, Math Pen Pals
299	Jacob Pleasants, Teaching Students to Construct Scientific Models



# Session 4 1:00 P.M. - 1:45 P.M.



*For a detailed listing of all sessions, visit [ictm-ists-conference.info](http://ictm-ists-conference.info)*

Rooms	Session 4 1:00 to 1:45pm
150	Tracy Landrum, Carolina Curriculum
154	Chris Whitmer, VSI Aerospace
158	Robert Keller, Science + Math = Relevance + Authenticity + Rigor = Engagement
160	Stacie Turnbull & Grace Troupe, Journey of a Gene - a free biotechnology app
167	Lori Ihrig & Leslie Flynn, Integrating STEM Research in the High School Experience
171	David Ewing, The Geometry of Music
175	Katie Borton & Allen Schwery, EcoDay: Community Outreach and Ecological Education
179	Jeannette Olson & Vincent Genareo, Algebra Progress Monitoring: What's New?
Auditorium	Kayla Brauer & Michelle Millage, Innovation through the Nature of Technology & Engineering
204	Kelen Panec & Shannon Hafner, Real World Data and Research Examples to Address STEM practices & NGSS
208	Marty Beck, Using the Area Model to Teach Multiplying, Factoring and Division of Polynomials
250	Yvette McCulley, Identity Formation & Learning in STEM
252	Tim McNicholl & Kirsten Hogenson, Precalculus reform at Iowa State University
254	Alicia Schiller & Jamey Smith, Technology in the Science Lab Classroom
260	Maryann Huey, Wendy Weber, Deidra Baker & Sharon Flinspach, What Condition Are You In? A High School Probability Unit
262	Hedi & Dan Lauffer, (WI Fast Plants) General Session
275	Olof Steinthorsdottir & Elizabeth Hughes, Cognitively Guided Instruction and the 5 Practices for Orchestrating Productive Mathematics Discussions
299	Sarah Borzo, Using Discrepant Events to Teach Nature of Science

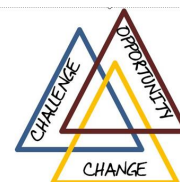


# Session 5 2:15 P.M. - 3:00 P.M.

*For a detailed listing of all sessions, visit [icm-ists-conference.info](http://icm-ists-conference.info)*

Knowledge	Argument	STEM Ed	Ldrship	Overlap	Struggling	Commercial
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Rooms	Session 5 2:15 to 3:00pm
150	Cheryl Krafta, CPM
154	Sherm Lundy, Iowa Limestone Producers
158	Roger Johanson, Constructivist Dilemma
160	Lynne Campbell & Julie Graber, Defined STEM: Resource to Support Authentic STEM Teaching & Learning
167	Lori Ihrig & Joanne Olson, Glimpsing into the Lives of Beginning Science Teachers - their Experiences May Surprise You
171	Teresa Finken, Engineering Is for Little Fingers too!
175	Amy Root & Jesse Wilcox, How to Survive Your Beginning Years of Teaching
179	Julie Hartzler, Let's Dig Into Trig
Auditorium	Jason Lang & Meghan Reynolds, Real World Externships for Teachers of Math, Science & Technology
204	Christopher Soldat & Leslie Flynn, Formative Assessment: The Bridge between Teaching & Learning
208	Heather Bolles, Elgin Johnston, Hien Nguyen & Adrian Jenkins, Do Clickers Advance Student Learning In Large-Enrollment Calculus?
220	Kevin Schroeder, It's About Time
240	Will Fett, Iowa Agriculture Literacy Foundation
250	Jean Oberbroeckling, Building Cities of the Future
252	Wolfgang Kliemann, Iowa Core-and then? Transition courses in Mathematics
254	Jennifer Reid-Smith, Strategies for Successful Implementation of Readings in the Secondary Science Classroom
260	Vicki Bachman, Fostering Student Engagement and Curiosity in Elementary Mathematics
262	Kelley Williams & Rachel Williams, The Art of Play & Early Science Exposure
275	Patsy Fagan, Using TI-Nspire Technology to Foster Independent Student Learners
299	Rebecca Christoffel, Field Notes: A Graduate Student Publication Aimed at Increasing STEM Interest and Competency

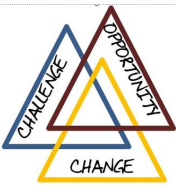


# Session 6      3:15 P.M. - 4:00 P.M.

*For a detailed listing of all sessions, visit [icm-ists-conference.info](http://icm-ists-conference.info)*

Rooms	Session 6      3:15 to 4:00pm
150	Scott Hutton, Fuel Education
154	William Kearney, McGraw Hill Education - New Everyday Math 4 Overview
158	Marvin Gamble, Pythagorean Triples to Infinity and Beyond?
160	Patricia Higby, Make a FREE MOOC Benefit You
167	Michael Clough & Joanne Olson, NGSS & Misconceptions Regarding the Crucial Role of Basic Science
171	Marty Beck, Using the Area Model to Teach Multiplying, Factoring and Division of Polynomials
175	Leslie Flynn & Dawn Bowlus, STEM Innovator: Infusing Entrepreneurship and Innovation into the K-12 Classroom
179	Les Miller, Meeting Core Requirements in Science and Mathematics Using Computational Modeling
Auditorium	Laura Bader, On Target: Making Standards-based Grading Work in a Traditional Reporting World
204	Jesse Wilcox & Geoff Root, Minds in Motion: Using the Nature of Science to help Students Deeply Understand Newton's 1st Law
208	Mike Baker & Tracy Wingert, To Flip or Not To Flip - That is the Question
220	Jane Owen, Explore Learning
240	Cindy Hall, Iowa Agriculture Literacy Foundation
250	Shelly Vanyo & Jason Martin-Hiner, MacGuyver Windmills: The Physics of Wind Power and Energy Transfers
252	David Ewing, Zombie Apocalypse
254	Doreen Hayek & Marcy Seavey, Getting Students Excited about Science Again
260	Melissa McAninch, How to Ask the Right Questions
262	Ariana Krueger, Transforming Test Reviews
275	Allysen Lovstuen, Modeling with Google Sheets
299	Krystal Schmidt & Jim Colbert, Helping Students Learn to "Lichen" Biological Diversity





## Exhibitor Door Prize Drawing! 4:00–4:15 p.m.

Win prizes donated by our exhibitors in this jackpot extravaganza!

Drawing of 50% complete Exhibitor Check-off Cards  
will begin at 4:00 p.m. at the Exhibit Hall.

You must be present to win!



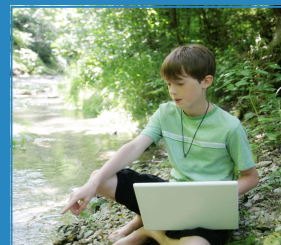
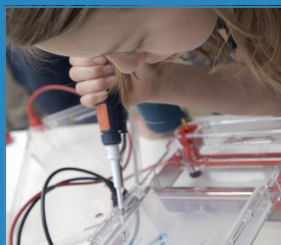
### Save the date! April 17– 18, 2015

The 127th Annual Meeting of the Iowa Academy of Science will be held Friday and Saturday, April 17 – 18, 2015 in Iowa City at the University of Iowa Memorial Union.

### *Iowa Junior Academy of Science*

**Visit the IAS Booth for more information and to join.**

The Iowa Junior Academy of Science provides resources and programs for 6th-12th grade science students and their teachers/parents. IJAS promotes individual and small group student research, awards, scholarships, and extra-curricular activities to broaden a student's science experiences.



# The Presidential Awards for Excellence in Mathematics and Science Teaching



(PAEMST) are the Nation's highest honors for teachers of mathematics and science. The awards recognize highly qualified K-12 teachers for their contributions in the classroom and to their profession. The core of the award is a \$10,000 National Science Foundation grant to the recipient's school, to be spent at the teacher's discretion.

## Iowa 2012 Winners

### Mathematics Winners

**Josie Burg**

Downtown School  
Des Moines Community Schools

### Science Winners

**Mason Kuhn**

Shell Rock Elementary,  
Waverly-Shell Rock Schools

## 2013 Nominees for Iowa

### Mathematics Nominees

**Allysen Lovstuen**

Decorah High School

**Jeff Marks**

Roosevelt High School

Des Moines

**Brian Reece**

Central Academy

### Science Nominees

**Shannon McLaughlin**

Norwalk High School

Norwalk

**Marcia Powell**

West Delaware High School

Manchester

## 2014 Nominees for Iowa

### Mathematics Nominees

**Tamara Bane**

**Janna Bjork**

**Tammie Cass**

**Ann Johnson**

**Mary Sweeney**

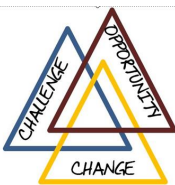
### Science Nominees

**Josh Steenhoek**

Jefferson Intermediate  
Pella Community Schools

**Jessica Watson**

Downtown School  
Des Moines Community Schools



# ISTS AWARDS

The mission of the Iowa Academy of Science is to further scientific research, science education, public understanding of science and recognize excellence in these endeavors. One of the ways to recognize this excellence is by awards. We encourage you to nominate a deserving individual or corporation for an **appropriate award**.

**The Friend of Science (FOS) Award - Individual** - ISTS recognizes with a plaque an individual or group, within the state, who has made significant contributions to ISTS and/or to science education at the local, regional or statewide level.

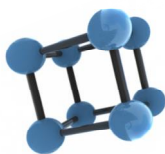
**The Friend of Science (FOS) Award - Corporate** - ISTS recognizes with a plaque a corporation, company, coalition, foundation or government entity who has made significant contributions to ISTS and/or to science education at the local, regional or statewide level.

**The Outstanding Service Award (OSA)** - ISTS recognizes with a plaque an ISTS member who has made sustained, extraordinary contributions to ISTS and/or to science education at the state and/or national level.

**Excellence in Science Teaching Awards (ESTA)** - The Iowa Academy of Science (IAS) awards to outstanding teachers of all grade levels and areas of science, teachers who are recognized for their work and innovations in science education. The core of the Award is \$200 for the teacher and a Plaque.

Nominations are accepted in the following categories:

- Physical Science (physics, chemistry and physical science)
- Life Science (biology, anatomy/physiology, life science)
- Earth/Space Science/Environmental Science
- General/Multiple Science (integrated science, interdisciplinary courses, multiple preps)
- Middle School/Junior High Science
- Elementary Science (two awards may be given/year)



## The Iowa Academy of Science

Iowa's only statewide organization for  
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and science enthusiasts representing  
all scientific disciplines.



Join us in our mission to  
further scientific research,  
science education,  
public understanding of science  
and to recognize excellence in  
these endeavors.



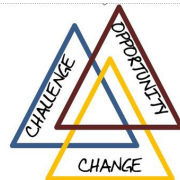
**Your IAS Membership includes membership  
to the Iowa Science Teaching Section  
and up to three additional sections of the Academy.**

Join the Academy today!

Visit our booth in the exhibit hall or visit us  
online: [www.iacad.org](http://www.iacad.org)



## 2014 Outstanding Service Award



**Gale Louise Vermeulen** has a servant personality and believes in helping whenever and however she can. Throughout her teaching career, she worked considerably more than an 8 to 4 work day, serving as a role model for her students and helping them be successful both in science and life. Gale taught a variety of science courses and chaired the science departments as well as other school committees at 4 different high schools during her 36 year teaching career (Tri-County of Thornburg, Twin Cedars of Bussey, Eddyville-Blakesburg and Oskaloosa). She piloted both the PRISMS physics and CRISTAL chemistry courses, earned National Board certification for chemistry teaching in 2002, and received the Outstanding Educator award from the Oskaloosa Chamber of Commerce in 2012. She was a regular new teacher mentor and has always encouraged authentic excellence in teaching. Additionally, she taught biology for elementary majors at William Penn University, dispelling some of the fears elementary teachers have of science, as she had them actively doing science during every class session. Gale has been a frequent presenter at ISTS fall conferences, and an encourager of her department to do likewise. Her presentations usually involved demonstrations because they provided learning as well as a way to hook kids on science. Gale was

named an IAS fellow in 1976 and also received the IAS Excellence in Science Teaching Award (ESTA) for teaching chemistry in 1978. She is an ISTS Regional Director and has worked on the planning committee for numerous ISTS Fall Conferences. Gale has always been a hard worker. She readily took on the task of being the Chair of ISTS and led the planning for the 2007 ISTS Fall Conference. Later she was elected President of the Iowa Academy of Science (IAS) (the parent organization for ISTS), and this year she is serving in her final year of IAS leadership by serving as the IAS Past-president. Although both retired, Gale and her husband Cor have continued to attend the ICTM-ISTS Fall Conferences and help with set up and registration as well as being available for any job needing done during the conference. It is easy to see why Gale Vermeulen was a clear choice for the 2014 ISTS Outstanding Service Award.

**Traci Maxted** is a National Board Certified teacher who has been an active member of ISTS for many years, presenting numerous times at the *ISTS Fall Conference*. Among the roles she has served for ISTS are: as a member of the Fall Conference Committee, member of the selection committee for *Excellence in Science Teaching Award*, member of the *Recognition and Awards Committee*, an ISTS Regional Director, and as ISTS vice chair, section chair and conference chair from 2006-2008. In her most recent role, Traci has served as ISTS program coordinator from 2006 to 2013. She is the 2010 recipient of the Iowa Academy of Science *Excellence in Science Teaching Award for Excellence in Physical Science Teaching*. For more than 20 years, she has taught various levels of physics and physical science at Cedar Rapids Jefferson High School, mentoring numerous new teachers along the way. Traci hopes to keep encouraging science and STEM education in Iowa into the future. Traci Maxted is a well deserving recipient of the 2014 ISTS Outstanding Service Award.

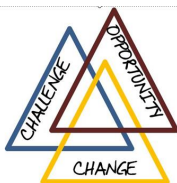


## 2014 Excellence in Science Teaching Award



Shown at the IAS Annual Meeting are (from left):

Christopher Like—Physical Science  
Shelly Vanyo—General / Multicategory  
Brooke Maine—Life Science  
Patrice Teigland—Elementary  
Ariana Krueger—Middle School  
Tami Plein—Supervisory (inaugural)  
Not Shown: Michael Todd—  
Earth/Space Environmental Science



## 2014 Friend of Science Award—Corporate

**Pella Wildlife Company**, a non-profit wildlife conservation organization, was established in 2009 on the founding principle of wildlife education based on the National Science Teachers Association position statement *“Observation and experimentation with living organisms gives students special perspectives of life processes that are not provided by other modes of instruction. Study animals in the classroom enables students to develop skills of observation and comparison; a sense of stewardship; and an appreciation for the unity, interrelationships, and complexity of life.”* Today, Pella Wildlife Company is recognized as a leader in the development and presentation of science based wildlife education programs for students of all ages. Creating a template for wildlife education based in Iowa, Pella Wildlife Company has been recognized at the international level by participating in the International Union for Conservation of Nature Committee on Education and Communication as well as providing the Basics of Wildlife Education as a workshop for The Wildlife Society.

With a continued focus on wildlife education the outreach program, Academy of Wildlife Education at Merle Hay Mall, has been a destination location for thousands of Iowa students as well as a source of internship for university students. College students studying wildlife ecology, animal science, political science as well as marketing, creative writing, and the arts have all learned how wildlife impacts many disciplines of education.

The commitment to education will continue as Pella Wildlife Company plans to develop a 103 acre campus that will feature a drive through wildlife park, new Academy of Wildlife Education featuring indoor and outdoor classrooms, a wildlife biodiversity research facility and a full service high capacity wildlife rehabilitation center. This will allow Pella Wildlife Company to be self-sustaining and continue to provide S.T.E.M. based wildlife education to students throughout the state of Iowa and beyond. It is clear that Pella Wildlife Company is deserving of the 2014 ISTS Corporate Friend of Science Award.



**Kemin Industries Inc.** is a privately held bioscience company that researches and manufactures molecules to deliver important nutrition and health benefits through products consumed by people and animals. The company has more than 500 specialty ingredients, nearly 2,000 employees and operates in 90 countries. As a bioscience company, STEM education and ensuring the availability of talent is especially important. Kemin has an extensive internship program that employs more than 20 interns every summer at its headquarters in Des Moines, Iowa. In addition, the company's externship program provides educators in the community an opportunity to research and experiment alongside Kemin scientists.



In 2013, Dr. Chris Nelson, President and CEO of Kemin Industries, was named atop 100 CEO leader in STEM bySTEMconnector®. In 2010, he announced a five-year expansion plan that would not only bring new infrastructure, but hundreds of STEM-related jobs.

Other STEM initiatives Kemin supports include:

The Science Center of Iowa—providing financial support for world-renowned interactive exhibits and programs. Kemin was also instrumental in raising funds for the construction of the new \$62 million Science Center several years ago.

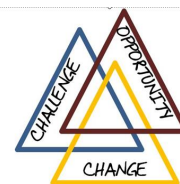
Job shadowing — giving students at two local high schools the opportunity to routinely interact with Kemin scientists and researchers. The experience makes science tangible, memorable and “real” to those who have never seen applied science.

Tours—company representatives regularly give tours to students and community leaders, offering direct interaction with scientists and researchers.

Member of the Governor's STEM Advisory Council    Member of Iowa Biotechnology Association    Member of the Iowa Innovation Corporation

Through these initiatives, Kemin hopes to demonstrate the relevance and impact of science, technology, engineering and math to educators, scientists and students alike. It is easy to see why Kemin Industries Incorporated was the choice as the 2014 Corporate Friend of Science Recipient.





## 2014 Friend of Science Award



**Joseph Schwanebeck** was Science Center of Iowa's Director of Education and always looking for new ways to help people have fun and connect with science. As part of his job, Joe worked to align SCI's experiences with the curriculum needs of classrooms across Iowa. His desk sometimes doubled as a prototyping space for new experiments, so his blog may have been typed between a cardboard model of a buckyball and a test-tube filled with a greenish liquid. Joe worked at SCI since December 2007, when he started as an Outreach Presenter. He had many different roles, the most recent as the Director of Education, but is probably best recognized as "Joe the Science Guy" to children, teachers, families, and communities across the state where he took the fun of science and learning on the road. Whether it was frying pickles while teaching about electricity, blowing stuff up, or extolling about the wonders of Nanotechnology, he exuded passion for science and inspired many and would periodically make horrible science puns.

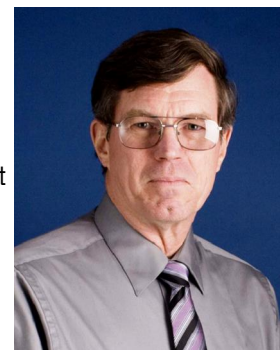
Joe was a frequent face at ISTS over the years as well as being involved in a variety of projects across the state including, Next Generation Science Standards Task Force, Real World Design Challenge, working with the Department of Education and Iowa Space Grant Consortium. Nationally, he was recognized by many peers in the Science Museum community through his work with the Nanoscale Informal Science Education Network and the Association of Science and Technology Centers.

Joe's passion for science and learning continued throughout is battle with "Marvin the Melanoma", often remarking at how interesting the disease and treatments were and even taking pictures of the MRI of his brain to share. Joe loved science, teaching science and sharing science, and is the 2014 recipient of the ISTS Individual Friend of Science Award. Joseph Jon Schwanebeck 6/28/1984 - 9/21/2014

**Pete Holden** is a true friend of science education. Pete willingly donates his time, money, and expertise. He is greatly appreciated by students, the school, and community. He donates money to help fund scholarships each year to send two of our North Tama students to Space Camp, believing in the importance of the amazing opportunities these experiences provide for rural students. Pete also helps coach the Lego League. His enthusiasm for science is very apparent and comes up with new ideas to improve Lego League at North Tama.

Pete is also the Mayor of Traer, with its own wind turbine and solar farm, making a truly green city. He is always willing to help connect city workers with projects going on in classrooms. Recently, he helped connect classes with city utility workers who took students on tours of city sewage lagoons and explained the processes involved. This opportunity was very effective in helping students understand more about water quality and protection.

Pete spends time working with a group of community members as they build their skills programming robots so they are prepared to work with our sixth grade students and teach them programming. This is part of a big event in elementary school where experts are invited into classrooms to work on projects with students. Co-teaching with high school teachers about alternative energy is another way Pete helps enhance science education at North Tama. His fresh perspective in teaching helps more students have "Aha!" moments. Pete is a true friend of science education and is a logical choice as the 2014 ISTS individual recipient of the ISTS Friend of Science Award.!



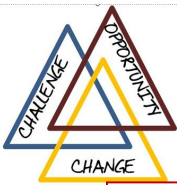
## Fellows of the Iowa Academy of Science



A Fellow is elected by the Board of Directors from those members who have provided meritorious service to the Academy and effective promotion of science in Iowa. Fellows remain as long as they maintain membership. This is an honor with the same privileges and responsibilities as a Professional Member. The Board of Directors solicits nominations for Fellows from the membership in the fall of each year.

**Please consider nominating a worthy candidate today!**

For more information, contact IAS at [iascience@uni.edu](mailto:iascience@uni.edu).



# ICTM AWARDS

## State Friend of Mathematics Award

The State Friend of Mathematics Award honors an individual who has made significant contributions to mathematics education in the state of Iowa. Regional Directors are responsible for submitting the names of potential nominees. These names are presented at the June Executive Board meeting. The Executive Board is responsible for nominating and awarding the State Friend of Mathematics through a vote. The State Friend of Mathematics Award is presented at the ICTM Annual Conference. Awardees are given a wooden plaque with a metal plate inscribed with the ICTM logo and the name of the recipient.

## Lifetime Achievement Award

The Lifetime Achievement Award honors an individual who has made significant contributions to mathematics education during her or his lifetime. ICTM Executive Board members nominate individuals for this award. The recipient is determined by vote during the Executive Board meeting. The Lifetime Achievement Award is presented to the recipient at the ICTM Annual Conference. The recipient of the award receives a wooden plaque with a metal plate inscribed with the ICTM logo and the name of the recipient.

## Conference Grant

ICTM offers two grants each year of up to \$800 each to encourage and support a certified mathematics teacher in attending an NCTM regional or national conference.

## Curriculum Grant

ICTM offers three grants of up to \$500 each year to encourage and support the efforts of individual or teams of certified mathematics teaching staff in the development and implementation of innovative teaching strategies or projects in the field of mathematics.

## Advanced Tuition Grant

ICTM offers two grants of up to \$500 each to support an ICTM member who is pursuing education related to mathematics education and/or mathematics teaching.

## Lifetime Achievement Award



**Dr. Tonya Urbatch** started her education career fifty years ago teaching Math and English in Eddyville-Blakesburg Community Schools. She followed that by teaching in Davenport Schools for almost a decade. She went on to receive her PhD and then worked as a Mathematics Coordinator for the Mississippi Bend AEA followed by a seventeen year stint as the director of staff development and student assessment for Davenport Schools. Most recently, she has served the math teachers around the state as a math consultant. She was actively involved in Every Student Counts and now on the State Mathematics Leadership Team. One of her most recent projects has been to curate the Iowa Core Mathematics Support webpage.

## Friend of Mathematics Award

As executive director of the Iowa Academy of Science **Craig Johnson** has been instrumental in making the combined ICTM—ISTS conference a reality.

His professional experience has included working 27 years as a broadcast meteorologist in eastern Iowa including KWWL Television in Waterloo, WMT-AM-FM-TV in Cedar Rapids, and now with Weather Briefing, L.C., in Cedar Falls. He also writes two weekly weather columns for local newspapers. "Weather Whys Guy" is an educational column on meteorology written for the general public and "Ag Weather" provides a two-week weather outlook for anyone needing to plan outdoor work or activities. He has made numerous public appearances speaking to schools, civic groups, and professional organizations.








# 2014 Exhibition Hall




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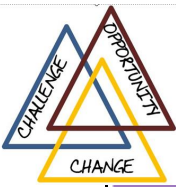
 <b>COLLEGE OF EDUCATION</b>	<b>Ashlee Van Fleet</b>	<b>Belin Blank Center</b>
	600 Blank Honors Center Iowa City, IA 52242	<a href="mailto:ashlee-vanfleet@uiowa.edu">ashlee-vanfleet@uiowa.edu</a>

 <b>Office of Biotechnology</b> Iowa State University	<b>Mike Zeller</b>	<b>Biotechnology-Outreach Center</b>
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	<b>Lindi Doherty</b>	<b>Bitwixt Software Systems</b>
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 <b>CAROLINA</b> Curriculum for Science and Math	<b>Michelle Reed</b>	<b>Carolina Curriculum</b>
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## Curriculum Associates

**Dam Henderson**

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**Vince Zaccardi**

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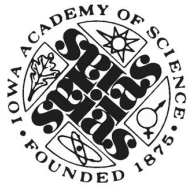
Susan Z. Clarke

[campinventionmn@aol.com](mailto:campinventionmn@aol.com)

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16301 Hilltop Rd.,  
Eden Prairie, MN 55347

[www.campinvention.org](http://www.campinvention.org)



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**Iowa Academy of Science**

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Cedar Falls, IA 50614-0508

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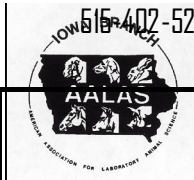
**Iowa Agriculture Literacy Foundation**

Cindy Hall

515-402-5250

P.O. Box 14458  
Des Moines, IA 50306-3458

[chall@iowaagliteracy.org](mailto:chall@iowaagliteracy.org)



641-257-3269

Shannon Schrader  
2000 Rockford Road  
Charles City, IA 50616

**Iowa Branch of AALAS**

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[https://sites.google.com/site/  
iowabranchofaalas](https://sites.google.com/site/iowabranchofaalas)



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**Iowa Conservation Education Coalition**

Linda Zaletel

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Nevada IA, 50201

[www.iowaEE.org](http://www.iowaEE.org)



**Iowa Council of Teachers of Mathematics/  
National Council of Teachers of Mathematics**

Megan Balong

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<http://www.iowamath.org>



## Aquatic Education

641-747-2200

## Iowa DNR - Aquatic Education

Shannon Hafner [karmin.klingenberg@dnr.iowa.gov](mailto:karmin.klingenberg@dnr.iowa.gov)

2473 160th Road,  
Gutherie Center, IA, 50115

<http://www.iowadnr.gov/Education.aspx>

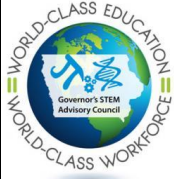


## Iowa Future City

Jean Oberbroeckling

[oberlueck@southslope.net](mailto:oberlueck@southslope.net)

<http://www.futurecityiowa.org/>



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Cedar Falls, IA 50614

## Iowa Governor's STEM Advisory Council

Kari Jastorff

[info@iowaSTEM.gov](mailto:info@iowaSTEM.gov)

[www.iowaSTEM.gov](http://www.iowaSTEM.gov)



515-262-8668

5911 Meredith Drive, Suite A,  
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## Iowa Limestone Producers Association

Jan Hall

[jhall@limestone.org](mailto:jhall@limestone.org)

[www.limestone.org](http://www.limestone.org)



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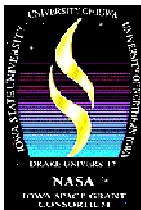
6450 Corporate Drive  
Johnston, IA 50131

## Iowa Public Television

Angela Hiatt

[angela.hiatt@iptv.org](mailto:angela.hiatt@iptv.org)

[www.iptv.org](http://www.iptv.org)



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## Iowa Space Grant Consortium / Extension Youth

Jay Staker

[www.iaspacegrant.org/](http://www.iaspacegrant.org/)



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777 3rd Street  
Des Moines, IA 50309

## Iowa State Education Association

Jean Hessburg

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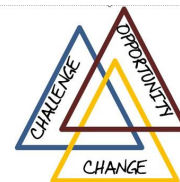
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# 2014 Exhibition Hall



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**John Burright**  
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Ames, IA, 50011

[jbburri@iastate.edu](mailto:jbburri@iastate.edu)

## ISU Computer Science

226 Atanasoff Hall  
Ames, IA, 50011

**Soma Chaudhuri**  
Department of Computer Science

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## ISU Liberal Arts & Sciences

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**Dylan West**  
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[dawest@iastate.edu](mailto:dawest@iastate.edu)  
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## ISU Mathematics

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[www.math.iastate.edu](http://www.math.iastate.edu)



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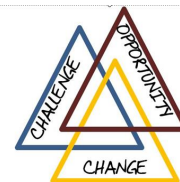
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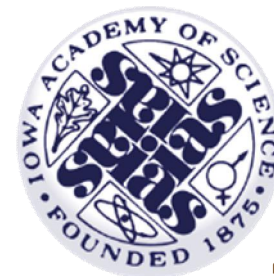
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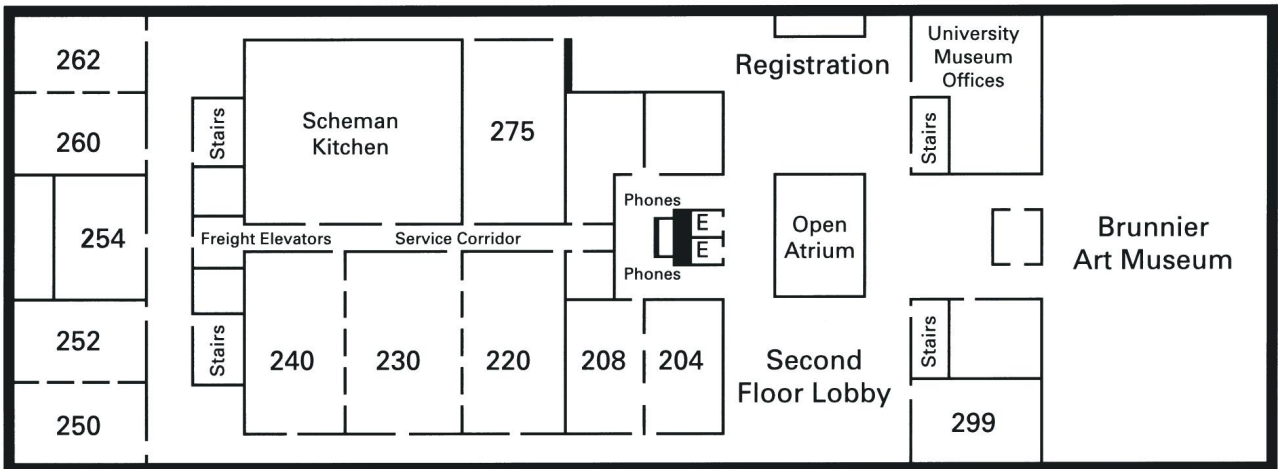
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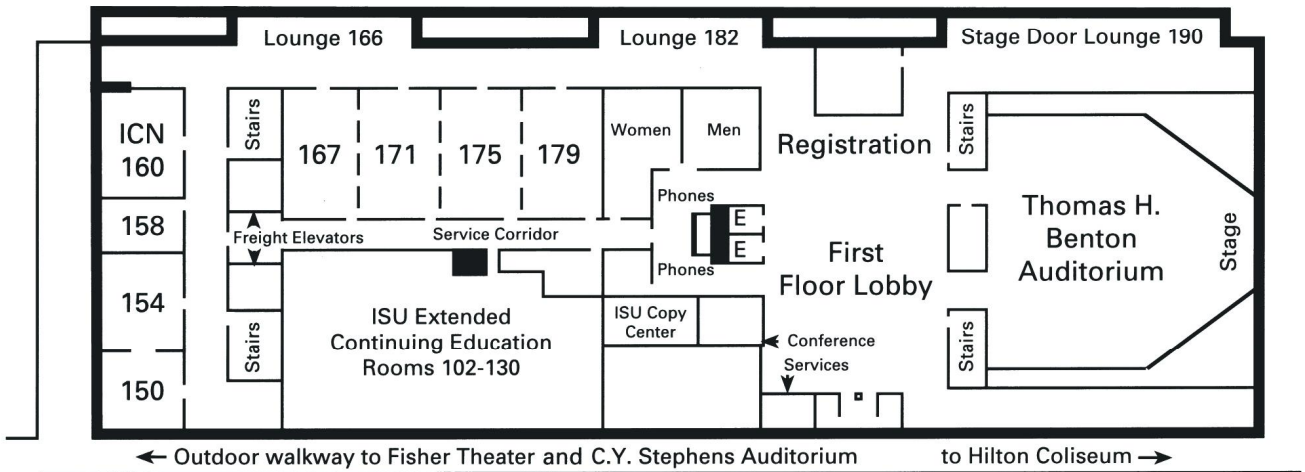
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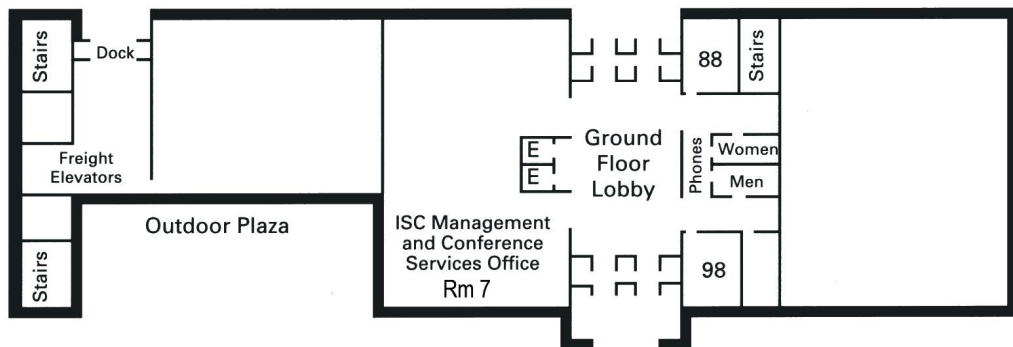




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