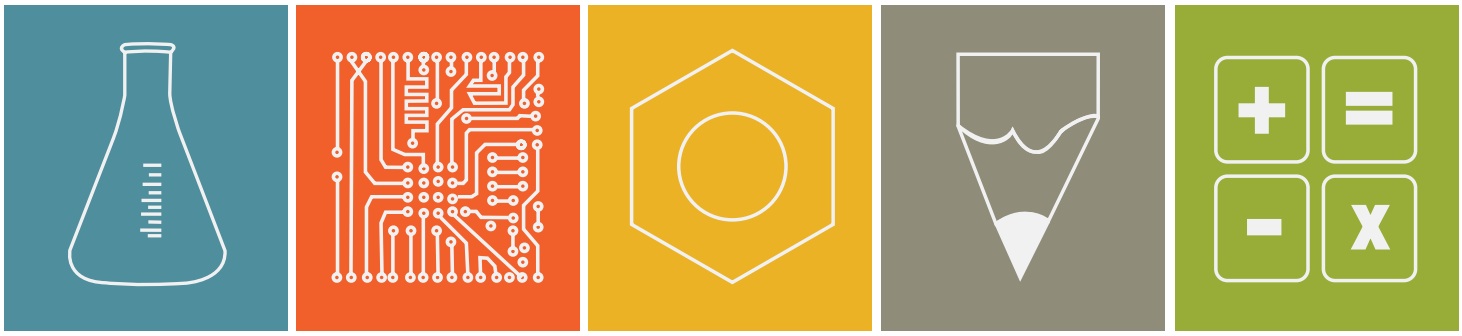
CEISMC @ GEORGIA TECH 2017

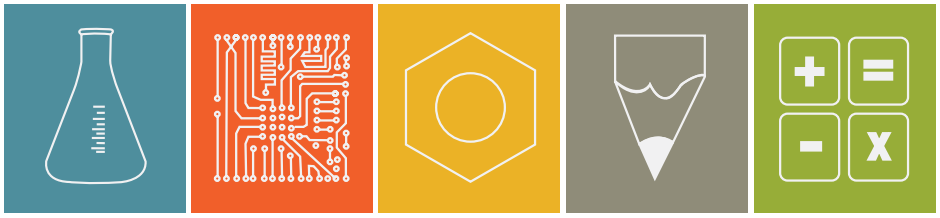


SCIENCE TECHNOLOGY ENGINEERING ARTS MATHEMATICS

STEAM LEADERSHIP CONFERENCE

CREATING THE NEXT®

Georgia Tech



WELCOME

Welcome to Georgia Tech!

Thank you for attending the CEISMC @ Georgia Tech 2017 STEAM Leadership Conference. We appreciate your participation at what, we hope, will become an annual event.

Our goal is for you to experience the best of what STEAM has to offer through engaging and interactive sessions that will challenge you, as well as inspire you toward innovation. From Georgia Tech researchers to local school principals, this conference will give you the opportunity to experience cutting edge tools, and engage in high-level conversations, that will assist you in moving toward transformational education.

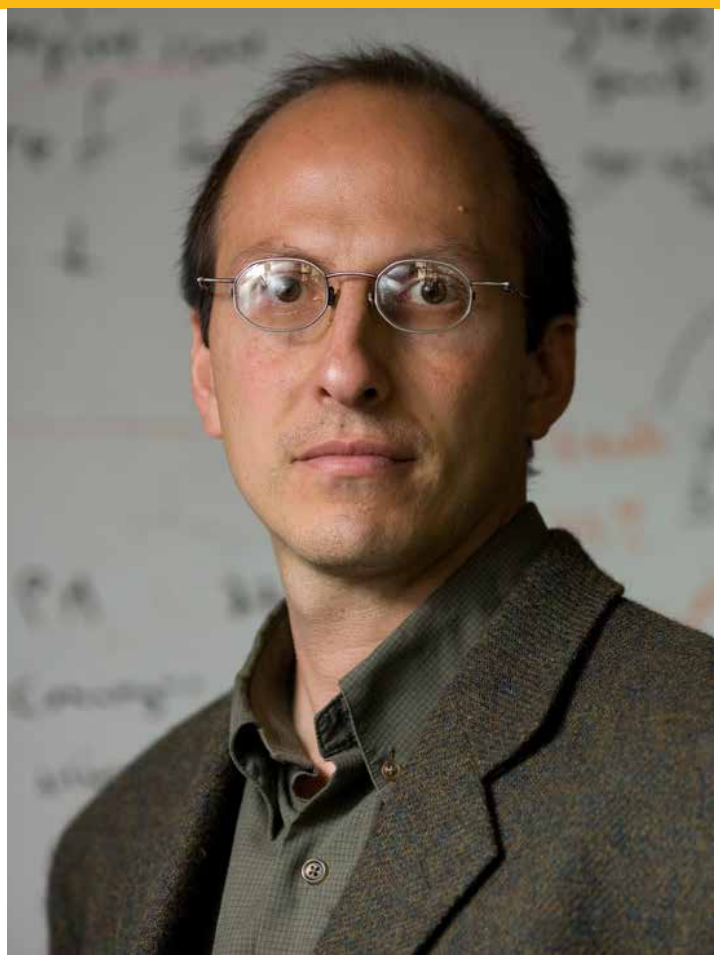
When you return to your own professional setting, use and apply the knowledge, skills, and insights you gain today. As leaders, you are the advocates for effective and engaging STEAM education.

Sincerely,
STEAM Leadership Conference Committee

Special thanks to our committee:
Tamara Pearson
Felicia Cullars
Mindy DiSalvo
Justin Dubbin
Steven Taylor

KEYNOTE SPEAKER

Ilah Nourbakhsh, Ph.D
Carnegie Mellon University



Dr. Illah Nourbakhsh - Carnegie Mellon University
Professor of Robotics, The Robotics Institute
Director, Community Robotics Education and Technology Empowerment Lab (CREATE Lab)

CREATE Lab
Community Robotics, Education and Technology Empowerment

ROBOT FUTURES

How will recent developments in technology change our lives – and practice – by the dawn of the next decade?

Robotics is undergoing a major transformation, and this transformation, in turn, will change how robotic technologies apply to education and engage learners of all ages. Robots aren't walking, talking humanoids any longer. Now, they crawl through riverbeds and measure water pollution; they correlate asthma attacks with particulate matter in the air; they capture high-resolution imagery of archeology sites and bring the sites right into the middle school classroom. In this talk, I will describe the convergence of robotics, Big Data, and community empowerment: how it's shaping a new discourse regarding the role of education in directing community change, and the role of communities in directing the future of technology innovation. We will describe key trends in technology that will be on-line in the next decade, explaining how new affordances in the 2020's will affect the practice of education and home-school integration.

Robot Futures contemplates what might happen in the not-so-distant future as robots become both ubiquitous and highly capable – with superhuman abilities in both the physical and digital realms. How we will share our world with these creatures, and how could our society change as it incorporates a race of stronger, smarter beings?

Illah R. Nourbakhsh is Professor of Robotics, Director of the Community Robotics, Education and Technology Empowerment (CREATE) lab (http://www.cmucreatelab.org) and Associate Director for robotics faculty at Carnegie Mellon University. His current research projects explore community-based robotics, including educational and social robotics and ways to use robotic technology to empower individuals and communities.

SCHEDULE

8:00 AM - 9:00 AM	Registration & Breakfast
9:00 AM - 10:00 AM	Georgia Department of Education Panel **Gilda Lyons**, STEM Coordinator **Felicia Cullars**, STEM/STEAM Program Specialist **Bryan Cox**, Computer Science Program Specialist
10:15 AM - 11:45 AM	"Let's Do STEAM" Sessions
12:00 PM - 1:00 PM	Lunch
1:00 PM - 2:00 PM	Keynote Speaker
2:15 PM - 3:00 PM	Breakout Work Sessions 1
3:15 PM - 4:00 PM	Breakout Work Sessions 2
4:00 PM - 4:30 PM	Next Steps / Evaluations

CONFERENCE SPONSORS

This conference was made possible by the generosity of the following sponsors:

Georgia Tech CEISMC

Georgia Tech Research Institute

GaDOE
Georgia Department of Education
Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

HUMMINGBIRD ROBOTICS KIT

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ATLANTA SCIENCE FESTIVAL

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ROOM 119 A **Let's Do STEAM**

inspirit: Virtual Reality for Immersive Learning

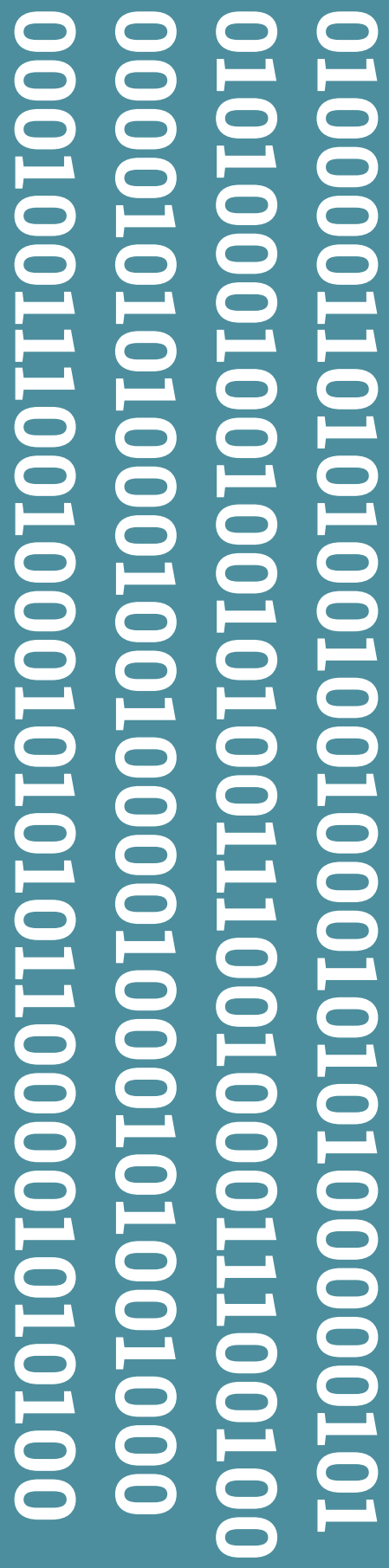
Neha Kumar
Assistant Professor
International Affairs and Interactive Computing
Georgia Tech

Aditya Vishwanath
Undergraduate Student
Computer Science
Georgia Tech

Virtual Reality (VR) simulations provide users with an immersive experience which is unmatched by other modes of delivering content. In this session, we introduce inspirit - a free mobile platform for hosting VR-based learning content for the classroom, and welcome you to work with us through a co-design exercise to develop a lesson plan that incorporates 360-degree images and videos. Our research lab at the GVU Center at Georgia Tech has been exploring the potential of leveraging the unique representational fidelity of VR to provide new and immersive learning experiences in the classroom. We encourage you to play with the inspirit mobile application and cardboard viewer, and our goal is to introduce you to the immense potential of VR-based learning that can provide students with an exciting and enriching classroom experience.

Neha Kumar is an assistant professor at Georgia Tech, appointed at the schools of International Affairs and Interactive Computing. She focuses on human-centered computing and sustainable development. She graduated from UC Berkeley's School of Information and was a postdoc at University of Washington Computer Science & Engineering and the Annenberg School of Communication at University of Southern California.

Aditya Vishwanath is a computer science student at the School of Interactive Computing at Georgia Tech. His research work is centered on engineering creative and contextually appropriate technological solutions for communities across the globe. He has been developing mobile and other emerging technologies for education for the past three years and is also involved in designing artificial intelligence powered sign language recognition systems that facilitate communication between deaf and non-deaf children. Recently, he founded inspirit - a company that develops situated learning content using co-design methods for mobile VR platforms.



Authentic Science

Regan Lawson
Retired High School Science Teacher
Doctoral Student
Applied Physiology
Georgia Tech

Wesley Gillis
Doctoral Student
Nuclear Engineering
Georgia Tech

This hands-on session will provide insight into what authentic science is and how it can be conducted in the classroom across all grade levels. You will experience exciting activities that demonstrate the value of authentic science in terms of both engagement and depth of conceptual understanding. The session will culminate with ways to support your science teachers in integrating this method of instruction into their classrooms.

Regan has a Bachelor's in biomedical engineering from Boston University, a Master's in secondary science education from University of Colorado and is currently pursuing her PhD in Applied Physiology focusing on individualizing analysis in cognitive motor control and motor learning. In her 20 years as a science educator, she has taught both middle and high school, as well as served in various school and district leadership roles. After completing her PhD, Regan hopes to use authentic science to provide a platform for bridging communication between high school and college educators regarding the transition to college science courses.

Wesley is a PhD student at Georgia Tech in Nuclear Engineering with research focused on the nonproliferation and detection of illicit nuclear material. He completed his Bachelor's in Nuclear Engineering at Georgia Tech in 2014, with a minor in French. Through his position as outreach coordinator for the Georgia Tech chapter of the American Nuclear Society, he has organized and led a variety of school and community events.

Robotics for BirdBrains!

Gail Tate
BirdBrain Technologies Certified Trainer
Avez Select

ROOM 119 C

Let's Do STEAM

Passionate about engaging computer science into your curriculum and searching for unique platforms? This workshop invites educators to explore a creative, arts-based STEAM program that is easy to learn. The program encourages creativity and innovation! We welcome you to enjoy an introduction to programming in Scratch and robotics with BirdBrain Technologies' Hummingbird Kit.

This is a hands-on experience that stimulates the creative process and problem solving. This workshop will also feature examples of how this technology can be used across the K-12 continuum with different programming languages. The Hummingbird Kit was designed at CMU's CREATE Lab, in a program called Arts & Bots. The BirdBrain method has a unique capacity to engage and inspire a wide range of students. Experience a fusion of programming, engineering and craft materials that is both fun and educational!

Gail is a BirdBrain Technologies' Certified Trainer and passionate about offering a fusion of Robotic Technology & Art! What better way to expand engagement for the new generation of roboticists, innovators and engineers! Her journey spans over thirty years offering technology engagement to educators, corporate and healthcare professionals. In addition, she has enjoyed sharing robotic programs directly to students at schools and community outreach events.

Ms. Tate holds a Bachelor of Fine Arts degree from the University of Buffalo and multiple training certifications in collaboration & graphic based software. Her prior experience as a Project Engineer for the audio visual & software technology industries continues to enhance her professional development.

Breakout Work Sessions

Breakout Work Session 1
2:15 PM - 3:00 PM

Keeping the Rigor - Room 119 A

Lya Snell
Mathematics Elementary Program Specialist
Georgia Department of Education

How do we maintain high levels of rigor in a STEAM classroom? In this session, participants will develop a common definition of rigor by keeping the concept of growth mindset at the forefront. Participants will also learn practical tips for increasing rigor in the schools and building a culture of high expectations.

STEAM Essentials - Room 119 B

Jeff Mathews
Principal
Peachtree Ridge High School

Abra Summers
Teacher
Peachtree Ridge High School

Listen to a story of how a successful STEAM program developed at a large, metro area high school. We will discuss successes and failures of an implementation that lead to GA STEM Certification and AdvancED STEM Accreditation. Full trans-disciplinary approaches, emphasizing a Project-Based Learning (PBL) environment, will be showcased.

Developing and Maintaining Strategic University Partnerships - Room 119 C

Mindy DiSalvo
Research Associate, GTRI
Georgia Tech

Tamara Pearson
Associate Director of School and Community Engagement, CEISMC
Georgia Tech

A key component of any successful STEAM program is the development of meaningful partnerships. In this session, learn how to develop and maintain partnerships with universities, including Georgia Tech. Participants will leave with clear strategies for collaboratively developing a partnership that is meaningful to all stakeholders.

Breakout Work Session 2
3:15 PM - 4:00 PM

STEM Bootcamp - Room 119 A

Sally Creel
STEM & Innovation Supervisor
Cobb County Schools

Effective STEM programs provide students with essential knowledge and skills to be successful in life. How do you build and sustain a STEM program? STEM Bootcamp that's where! Learn where to start, who to reach out to, how to gain traction, what to avoid and how to keep it going.

What's Next?
Continuing to Move Forward - Room 119 B

Margul Woolfolk
Principal
M. A. Jones Elementary School

Felicia Cullars
STEM/STEAM Program Specialist
Georgia Department of Education

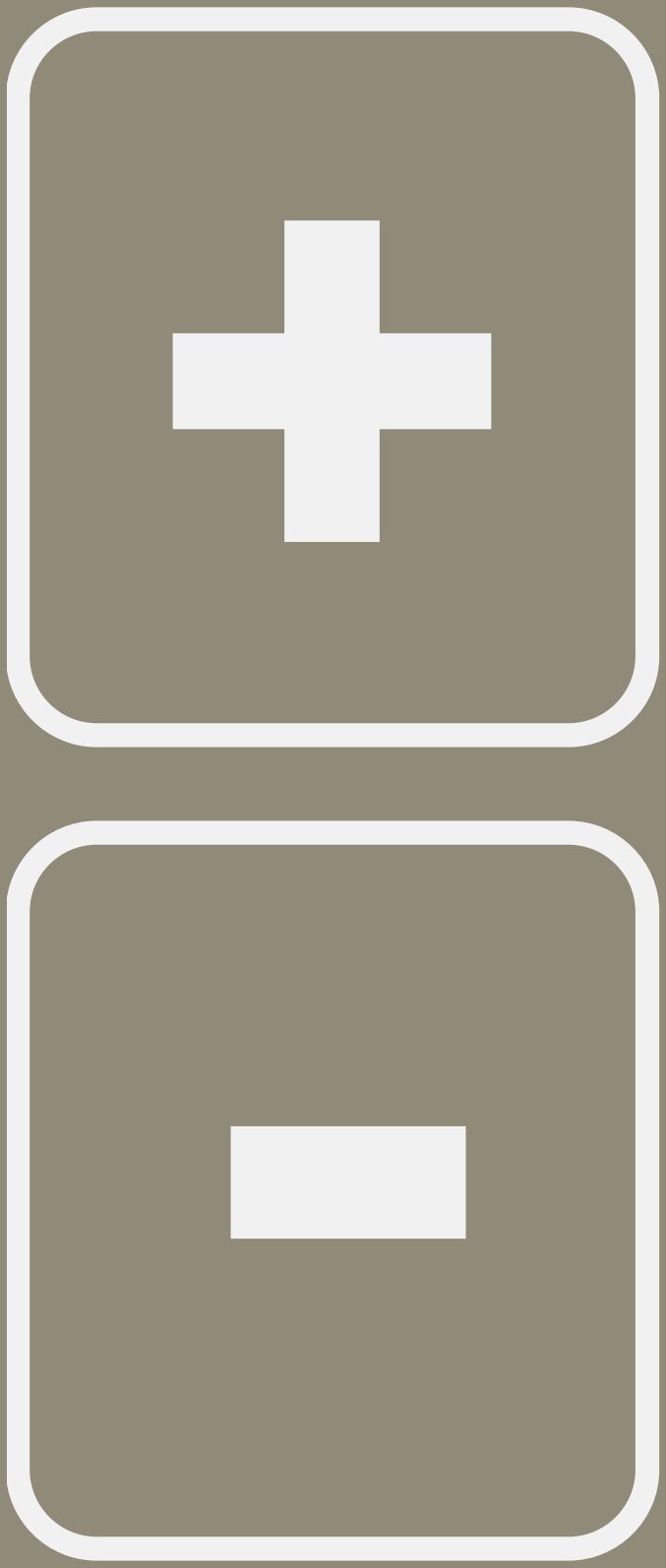
In year 2 or 3 of STEM/STEAM implementation and feeling a little stuck? This session will be a time for schools to collaborate around next steps. Come together to brainstorm ideas and discuss potential barriers and challenges of sustaining STEM/STEAM in your schools. You should leave this session with a plan or framework and begin answering the question of "What's Next"?

From STEM to STEAM - Room 119 C

Jamila Cola
Director
NSF Partnerships for Research, Innovation, and Multi-Scale Engineering (PRIME)
Research Experiences for Teachers
CEISMC, Georgia Tech

Pamela Walker
CEO & President
ArtsNow

Participants will learn about strategies to successfully implement STEAM or arts integration in the K-12 classroom. STEAM provides an engaging medium for a deeper dive into STEM content, so creative scheduling, collaborative planning, and coaching are needed for enhanced execution of year- long STEAM lessons. The STEAM classroom and lessons learned from STEAM collaborative programs will be discussed.



STEM @ GATECH

CEISMC

About CEISMC

The Center for Education Integrating Science, Mathematics, and Computing (CEISMC) enhances PreK-12 and post-secondary STEM education by drawing upon the expertise and scholarly contributions of the Georgia Tech community. CEISMC advocates for and leads systemic changes to increase STEM interest and achievement for all students, especially those underrepresented in STEM. CEISMC's research efforts allow for the identification and dissemination of evidence-based best practices in STEM education.
www.ceismc.gatech.edu

Apply now to the CEISMC GIFT Program

Founded in 1991, as a program of the Georgia Institute of Technology's Center for Education Integrating Science, Mathematics and Computing (CEISMC), GIFT is a paid 4-7 week summer internship for science, mathematics and technology teachers, offering real world immersion into the disciplines they teach. GIFT affords teachers an opportunity to experience first-hand, the connections between classroom activities and actual Science, Technology, Engineering and Mathematics (STEM) applications. Originally started as the Georgia Industrial Fellowship for Teachers with the placements of 17 teachers, GIFT subsequently changed the word industrial to intern to reflect an expansion of opportunities into university research in addition to business placements. Now placing 100 teachers a summer, GIFT has impacted teaching and learning for more than 100,000 students over the course of its history. Through leadership and commitment, GIFT is one of the largest and longest running Scientific Work Experience Programs for Teachers (SWEPT) in the country.
www.ceismc.gatech.edu/gift

Register now for CEISMC Programs Enriching Accelerated Knowledge in STEM (PEAKS)

Programs Enriching Accelerated Knowledge in STEM (PEAKS) offers over 24 hands-on summer enrichment programs for future engineers and scientists. These programs provide exciting inquiry-based STEM learning opportunities in advanced topics not typically available to pre-college students in traditional school settings. Over 675 Elementary through High School students attended Summer PEAKS in 2015. Examples of projects include mobile game and app creation, bio-robotics, product design, roller coaster physics, animatronics, environmental sustainability, the psychology of attention, BioIgnite, Industrial Systems Engineering, and a host of other leading-edge subjects.
www.ceismc.gatech.edu/ceismc-summer-peaks

NOTES

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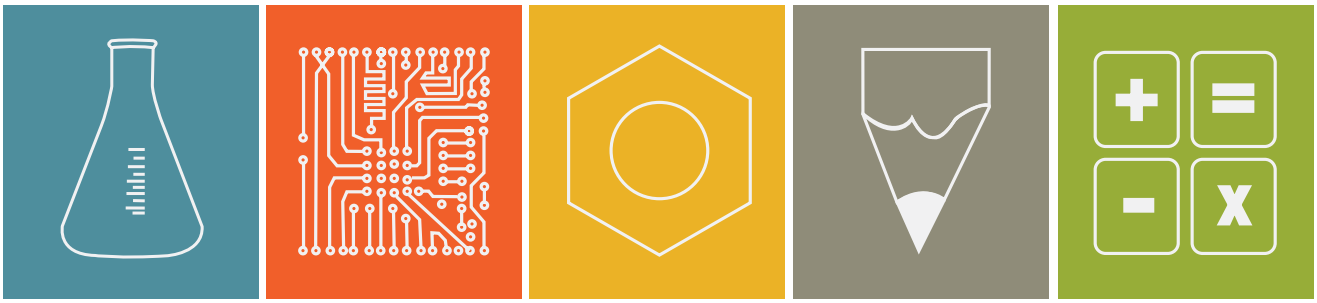

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March 16, 2017

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