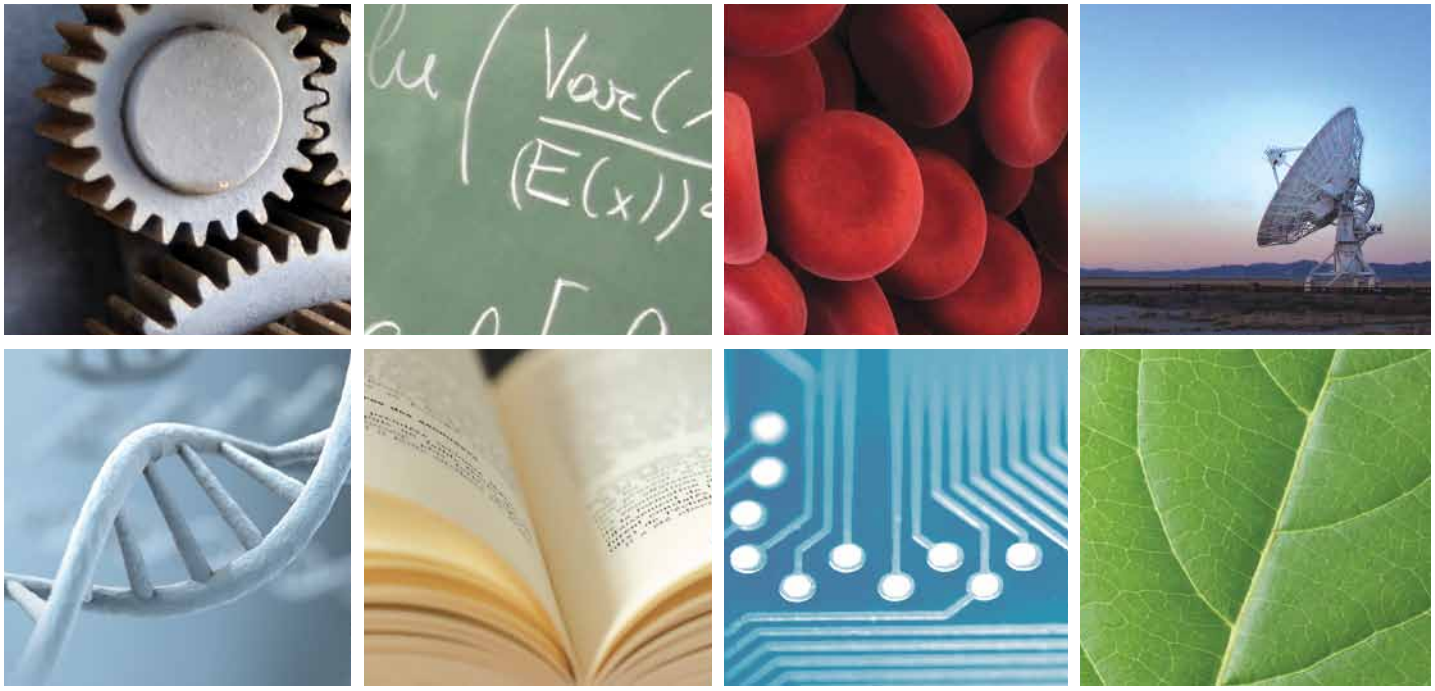
MASSACHUSETTS STEM SUMMIT 2014

GATEWAY TO THE FUTURE

OCTOBER 22, 2014 • DCU CENTER • WORCESTER, MA



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The Virtual High School

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Event Schedule

7:30am – 4:30pm Registration

7:30am – 9:30am Breakfast Buffet

8:30am – 9:30am Opening Plenary (Plenary Hall)

- **J. Lynn Griesemer**, Associate Vice-President, Economic Development, University of Massachusetts President's Office; Executive Director, UMass Donahue Institute
- **Congressman Joseph Kennedy**, Honorary Co-chair, Governor's STEM Advisory Council
- **Governor Deval Patrick**, Governor, Commonwealth of Massachusetts
- **Nathan Han**, Student, Boston Latin High School; Gordon E. Moore Award Winner, 2014 Intel International Science and Engineering Fair

9:30am – 9:45am Break

9:45am – 11:00am AM Breakout I

- Bootstrap - Teaching Algebra Through Video Game Programming
- Common Core and STEM – Will Standards and Assessments Make a Difference?
- Computer Science - The Essential Subject We're Not Teaching
- Data Collection Tools in Out-of-School Time - Evaluating Program Quality & Student Interest
- Engage with Engineering - Preparing a Science Department to Integrate Engineering Practices into its Courses
- Fostering Student Motivation and Achievement - Research to Practice and Lessons Learned from the ITEST Program
- Growing Up WILD - Family-style
- Increasing Accessibility to Algebra & Geometry for ALL Students
- Marlborough Public Schools - STEM Early College High School Model
- Massachusetts Integrative Science in Higher Education – What's Going On in 2014?
- Massachusetts' Computing Education Agenda - Opportunities and Equity for Work & Life
- Massachusetts' STEM Workforce - Employer Needs and Policy Implications (I)
- Raising the Bar with a Low Threshold - Teaching the Computational Process in an Introductory Course to Computer Science
- The Intersection of STEM and Healthcare - Developing a Diverse Workforce

11:00am – 11:15am Break

Event Schedule

11:15am – 12:30pm AM Breakout II

- A Panel Discussion and Demonstration on Being an Effective Early Childhood STEM Educator
- Aligning Expectations Between Community College Life Sciences Programs and Life Sciences Companies
- Building Successful Collaborative Partnerships for Effective STEM Professional Development for K-12 Educators
- Engaging Students Through Authentic Research
- Examining District and School Supports for Integrating K-12 STEM Education, Research, and Practice
- Five New Innovative Pre-School STEM Curricula Developed Through a DEEC Grant Program
- Global STEM Education - The Whys, Whats and Hows of Educating for the 21st Century
- How Do You Build It? A Practical Workshop on Designing an Integrative STEM Module
- Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways I (Formerly Best Practices in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways)
- Inspire Invention - Programs and Strategies for Every MA School
- STEM Integration for District Leaders - Strategically Planning for District-wide STEM Implementation
- Strategies for Teachers to Support English Learners in Mathematical Reasoning and Communication
- Taking STEM Learning Models to Scale in Gateway Cities - From Research to Policy and Practice
- The STEAM Engine - An Un-Conference for Out-of-School Educators, Directors, Volunteers & the Flight Crew (Part I)
- Working for the Nation's Space Program: NASA Resources in the Commonwealth

12:30pm – 1:15pm Luncheon Buffet

1:15pm – 2:15pm Luncheon Plenary (Plenary Hall)

- **Bryan Morry**, Executive Director, The Hall at Patriot Place presented by Raytheon
- **Doug Scott**, Natick High School; The Hall at Patriot Place presented by Raytheon 2014 Massachusetts STEM Teacher of the Year
- **Jeffrey Leiden**, Chairman, President and CEO, Vertex Corporation; Co-chair, Governor's STEM Advisory Council
- **Sheila Harrity**, Principal, Worcester Technical High School; 2014 MetLife/NASSP National High School Principal of the Year

2:15pm – 2:30pm Break

2:30pm – 3:45pm PM Breakout

- BLOSSOMS - Active Learning for High School STEM Classes, with Professional Development for Teachers
- Connecting Classroom Strategies to Real-World STEM through an Integrated Learning Approach
- Creating Intentional Learning Opportunities - Infusing STEM into Your Preschool Classroom
- Cultivating our Next-Generation STEM Workforce - A Joint Presentation on Early Undergraduate Research and Mentoring Programs from Bridgewater State University and the University of Massachusetts
- Digital Resources for STEM - What They Look Like in the Classroom
- Infant/Toddler STEM Session - Engaging Educators with Diverse Hands-on Ways to Introduce Science and Mathematics into the Infant and Toddler Learning Environment
- Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways II
- Massachusetts Integrative Science in Higher Education – Assessment: How Do You Know It's Working?
- Massachusetts' STEM Workforce - Employer Needs and Policy Implications (II)
- Preparing Students for Careers in Advanced Manufacturing
- Purpose, Passion and the Quest for 'Why?': Today's College Students Yearn To Make Sense Of STEM
- Teaching with MIT's App Inventor in your Classroom - Bring Mobile App Development to Life in Your 5-12 Curriculum
- The Gateway to STEM Careers is Being Future Ready
- The STEAM Engine - An Un-Conference for Out-of-School STEAM Educators, Directors, Volunteers & the Flight Crew (Part II)
- Uniting Public and Private Partners to Ignite Moments of STEM Discovery

3:45pm – 4:00pm Break

4:00pm – 4:30pm Closing Plenary (Plenary Hall)

- **Mike Hogan**, CEO, Makepeace Co.; Vice-chair, Massachusetts Business Roundtable
- **Steve Vinter**, Engineering Director and Cambridge Site Director, Google, Inc.
- **Joe Cox**, Executive Director, Worcester EcoTarium.
- **Presentation:** *"Inspiration Takes Flight at the EcoTarium"*

4:00pm – 5:00pm Light Refreshments and Networking

Plenary Speaker Bios

Joseph P. Cox

Joe Cox has served as the President of the EcoTarium since October 2012. Founded in 1825, the mission of the EcoTarium is, "To inspire a passion for science and nature". He previously served as the founding Executive Director of the Golisano Children's Museum of Naples. Prior to moving to Massachusetts he worked in the museum field for 16 years in Florida, having previously served as Director of the Conservancy Nature Center. He has a Bachelors Degree in Environmental Science from St. Mary's University in London with a focus on environmental law and paleoquaternary biogeography and completed his Masters in Museum Studies from the University of Leicester.

Joe was the recipient of a Smithsonian Fellowship in Museum Practice based at the National Zoo and National Museum of Natural History in Washington, DC. He completed the prestigious Getty Museum Leadership Institute at the Getty Center in Los Angeles. He is past Chair of the Florida Association of Museums (FAM) Foundation - the state wide organization dedicated to professional development for museum field. He is dedicated to improving the quality of place here in Worcester and is committed to inspiring a passion for science and nature in future generations of visitors to the EcoTarium. Since joining the EcoTarium, Joe has helped launch the new "Nature Explore: Outdoor Exhibit" and the first National Geographic Museum Theater partnership in Massachusetts.

J. Lynn Griesemer Ed.D.

J. Lynn Griesemer, Ed.D., M.P. A. is the Associate Vice President for Economic Development at the University of Massachusetts and the Executive Director of the UMass Donahue Institute. She is also an adjunct professor in the Public Policy and Administration program at UMass Amherst. Prior to joining the University, Dr. Griesemer was the Executive Director of the Northeast Regional Exchange, a seven-state, nonprofit collaborative in education for New England and New York. She held a faculty position and was the director of an education research and evaluation center at the University of Rhode Island.

Dr. Griesemer holds a bachelor's degree in mathematics from Cedar Crest College, a master's in mathematics education from the University of Tennessee, and a master's in public administration from the Kennedy School at Harvard University, where she was a Littauer Fellow. She received her doctorate in educational administration and curriculum from the University of Tennessee.

Since the formation of the University's five-campus system in 1991, Dr. Griesemer has worked closely with the President's Office, managing several system-wide initiatives in economic development and related areas including: the development of the UMass Center at Springfield; incubation of UMassOnline; development and growth of the STEM Summit in collaboration with the Governor's STEM Advisory Council and the Mass Business Roundtable; development of the Academy for Newly Elected Legislators in Massachusetts; management of the Life Science Initiative resulting in the publication of Growing Talent; the development of *Mass*Benchmarks; and the considerable expansion of the UMass Donahue Institute.

Nathan Han

Nathan Han, currently a sophomore at Boston Latin School, is the Gordon E. Moore Award winner at the 2014 Intel International Science and Engineering Fair.

He was born in 1999 in Des Moines, Iowa, and moved to Massachusetts with his parents later that year. In 2011, he ranked number one among the more than 2,000 students applied to Boston's three exam schools. At Boston Latin, he has maintained straight A+'s for all core courses over the years. Besides enjoying all academic subjects in school, Nathan has a wide range of interests. In addition to swimming, skating and playing violin, he is a co-captain of the Boston Latin Science Team, president of computer science club, founding captain of table tennis club, and an editor of the school newspaper, "the Argo."

Nathan started engaging in project-based STEM research in 2011 when he was in sixth grade. In that year, he was selected as a national finalist at the Broadcom MASTERS middle school science competition. Since then, and leading to his top-prize win at this year's Intel ISEF, Nathan had won first place awards at Boston City Science Fair and Massachusetts State Science and Engineering Fair for four consecutive years.

Sheila M. Harrity, Ph.D.

Sheila M. Harrity is the Principal at Worcester Technical High School. She has held this position since the new facility opened in the fall of 2006, and is the school's first female principal. Prior to coming to WTHS, Dr. Harrity was the Principal at Wachusett Regional High School. She previously worked as School to

Career District Coordinator, Coordinator of Work for Worcester's Youth, and District Coordinator of Advancement Via Individual Determination (AVID) for Worcester Public Schools. Earlier in her educational career, Dr. Harrity taught at the Millbury Street Elementary School, Mill Swan Elementary School, and the Comprehensive Skills Center.

Dr. Harrity received a Bachelor of Arts Degree with a major in Social Work from Providence College. She earned a Masters Degree in Moderate Special Needs from Assumption College, and a Masters Degree in Early Childhood Education from Worcester State University. Dr. Harrity earned her Doctoral Degree in Educational Leadership from Northeastern University in 2013. In addition, in 2014 Dr. Harrity received Honorary Doctoral Degrees from Becker College and from Worcester Polytechnic Institute.

In 1997, Dr. Harrity was selected as Teacher of the Year for the Worcester Public Schools, and has been inducted into the Worcester Public Schools' Teacher Hall of Fame as well as the Worcester Public Schools' Athletic Hall of Fame. She was a Massachusetts State Teacher of the Year semi-finalist and received the Worcester Business Journal "40 Under 40" Award, the Sports Alive Outstanding Community Service Award, and the Massachusetts Interscholastic Athletic Association Outstanding Service Award. In addition, Dr. Harrity received the Worcester State University Distinguished Alumni for Outstanding Achievement in Education Award.

Dr. Harrity was selected as the 2013 Massachusetts Principal of the Year, and in 2014 she was named the National High School Principal of the Year. In October of 2013, WTHS received the National Blue Ribbon School distinction for outstanding student achievement from the U.S. Department of Education. At the Blue Ribbon ceremony, Dr. Harrity was awarded the Terrel H. Bell Award for Outstanding School Leadership.

On June 11, 2014, President Barack Obama was the commencement speaker for Worcester Technical High School. The school was chosen as the only high school in the country at which he addressed the Class of 2014.

Michael P. Hogan

Michael Hogan has been President and CEO of the A.D. Makepeace Company since January 2004, and is responsible for directing all aspects of the company's real estate development and land stewardship, cranberry cultivation, and other business lines.

Mr. Hogan was recently elected to the Board of Directors of Ocean Spray Cranberries. He is a member of the state's Economic Development Council, which has been tasked with developing a statewide Strategic Economic Development Plan. He is Chairman of the Board of Directors of the Massachusetts Business Roundtable.

He is also a member of the Executive Board of Associated Industries of MA, the NAIOP Board of Directors, and the Board of Directors for the Old Colony YMCA, the Board of the Southcoast Hospitals Group President's Council, and the Northeastern University's School of Public Policy Advisory Committee.

He previously served for eight years as president of MassDevelopment, the state's economic development authority. In that role, he served as a Cabinet Officer for two Governors. Under Mr. Hogan's leadership, MassDevelopment created financing and real estate solutions that help companies to compete in the global economy. Mr. Hogan planned and managed the development of several large-scale mixed-use developments.

Mr. Hogan served as mayor in the city of Marlborough for four years, and six as a city councilor. In addition, Mr. Hogan has 10 years experience in pension and benefit management. He is a past president of the Mass Municipal Association.

Mr. Hogan and his wife live in Easton, MA with their four children.

Joseph P. Kennedy III

Joe Kennedy proudly represents the 4th District of Massachusetts in Congress. Currently serving his first term, Joe has dedicated his career to the simple idea that every American deserves to be treated fairly – by each other and by their government.

Joe believes that education lies at the epicenter of the economic opportunity our country was built on. Deeply committed to the manufacturing and innovation industries that drive the Commonwealth's economy, Joe is a consistent advocate for policies that keep our businesses strong and workforce competitive. As a member of the House Committee on Science & Technology and the honorary chair of Governor Deval Patrick's Science, Technology, Engineering and Mathematics (STEM) Advisory Council, Joe believes that industry, academia and government must partner to ensure our country leads the way in a global economy. Joe is working actively in Congress not just to support STEM education and workforce training, but also to extend these efforts to reach the middle-class, middle-skill workers that form the backbone of this country's economy.

As a member of the House Committee on Foreign Affairs, Joe believes that a strong economic future is central to maintaining our role as a global leader. A smart foreign policy requires strategic engagement with friends and adversaries alike to ensure our security and values of our country must always be first priority. By supporting efforts to impose tougher sanctions on Iran, re-affirm our critical alliance with Israel and promote human rights across the globe, Joe works hard to guarantee that America continues to stand as a pillar of democracy and freedom.

In his short time in Congress, Joe has emerged as a leading voice for equality and social justice. From fighting for pay equity to defending voting rights and co-sponsoring a full repeal of the Defense of Marriage Act (DOMA), Joe is committed to ensuring that no American is discriminated against based on who they are, what they believe, or who they love.

Prior to serving in Congress, Joe was an Assistant District Attorney for the Middlesex County and Cape and Island's District Attorney's offices. Joe attended Harvard Law School, where he spent most of his time working for the Harvard Legal Aid Bureau, a student managed pro-bono law firm. He met his wife, Lauren, on the first day of his first class at law school and the two worked together to start an after-school program for at-risk youth in the Boston area that is still in operation today.

He also served in the Peace Corps from 2004-2006, where he worked on economic development and community reinvestment in the Puerto Plata region of the Dominican Republic.

Joe grew up in Massachusetts and studied Management Science and Engineering at Stanford University, where he was the starting goalie and co-captain of the Men's Lacrosse team.

He and Lauren live with their dog, Banjo, in Brookline, Massachusetts.

Jeffery Leiden, Ph.D.

Dr. Leiden is the Chairman, President and CEO of Vertex Pharmaceuticals and was appointed as co-chair of the STEM Advisory Council by Governor Deval Patrick in March 2014. He has served as a member of Vertex's board of directors since 2009. Dr. Leiden has more than 20 years of scientific, commercial and financial experience in the pharmaceutical and biotechnology industries as well as clinical and scientific experience in academia as a practicing cardiologist and molecular biologist.

Prior to joining Vertex, Dr. Leiden was a Managing Director for Clarus Ventures, a life sciences venture capital firm he joined in 2006. From 2000 to 2006, he served as President and Chief Operating Officer, and Chief Scientific Officer, at Abbott Laboratories where he had responsibility for running Abbott's global pharmaceuticals business. While at Abbott, Dr. Leiden helped launch multiple breakthrough medicines, including Humira for rheumatoid arthritis and other autoimmune diseases and Kaletra for HIV infection, among others. He also served as a member of the Board of Directors of Abbott Laboratories and TAP from 2001 to 2006.

Dr. Leiden began his career in academia as a practicing cardiologist and molecular biologist. From 1987 to 2000, Dr. Leiden held several academic and hospital appointments, including roles as Chief of Cardiology at the University of Chicago, the Elkan R. Blout Professor of Biological Sciences at the Harvard School of Public Health and Professor of Medicine at Harvard Medical School. During his academic career, Dr. Leiden was also involved in starting several biotechnology companies including Vical and Cardiogene.

Dr. Leiden held a number of board positions in the pharmaceutical and biotechnology industries, including non-executive Vice Chairman for Shire Pharmaceuticals PLC and Director of Millennium Pharmaceuticals, Inc. He is a fellow of the American Academy of Arts and Sciences, and an elected member of the Institute of Medicine of the National Academy of Sciences. He is currently a trustee of the Brigham and Women's hospital and a member of the Scientific Advisory Board of Boston Children's Hospital. Dr. Leiden also serves on the board of directors for the Massachusetts Competitive Partnership (MACP) and the Boston Private Industry Council. Dr. Leiden received his B.A., M.D., and Ph.D. degrees from the University of Chicago.

Bryan Morry

Bryan Morry rejoined The Kraft Group as The Hall at Patriot Place's executive director during the venue's construction in December of 2007 after spending the previous two-plus years as the afternoon drive sports talk show host on the Score AM/FM in Providence, R.I.

Before his radio stint, he was the editor of the Patriots official team newspaper, Patriots Football Weekly, from 1997-2005 where he covered the Patriots for the newspaper, patriots.com and as part of the Patriots Football Weekly television show. Bryan covered all three Patriots Super Bowl victories for PFW and authored the coffee table book, Patriots United – the New England Patriots World Championship Season, following the surprising Super Bowl XXXVI win over the St. Louis Rams.

He currently oversees all museum operations. The Hall's partnership with Raytheon has helped it develop a strong STEM education program and implement programs such as The Hall at Patriot Place presented by Raytheon Massachusetts STEM Teacher of the Year program, among others. He also is on the board of directors of the International Sports Heritage Association (ISHA) for whom he chairs the communications committee.

He graduated from Boston University in 1993 with a BA in Journalism degree and has written for various local and national publications and websites.

Governor Deval Patrick

Deval Patrick was elected as Governor of the Commonwealth of Massachusetts in 2006 on a platform of hope and change. Now in his second term, Governor Patrick continues to be committed to expanding opportunity and prosperity in Massachusetts despite the challenging economic environment. The Patrick Administration has maintained or expanded the state's investment in critical growth sectors while delivering timely budgets and cutting state spending. Governor Patrick funded public education at the highest levels in the history of the Commonwealth and its school reform initiatives earned Massachusetts the top spot in the national Race to the Top competition. And through targeted initiatives that play to the Commonwealth's unique strengths, like his landmark 10-year, $1 billion program to promote the state's life sciences industry, the Governor has positioned the state as a global leader in biotech, bio pharmaceuticals and IT, and as a national leader in clean energy, including making Massachusetts home to the country's first offshore wind farm.

Patrick came to Massachusetts in 1970 at the age of 14. A motivated student despite the difficult circumstances of poor and sometimes violent schools on the South Side of Chicago, he was awarded a scholarship to Milton Academy through A Better Chance, a Boston-based organization. Governor Patrick is a graduate of Harvard College, the first in his family to attend college, and of Harvard Law School. After clerking for a federal judge, he led a successful career in the private sector as an attorney and business executive, rising to senior executive positions at Texaco and Coca-Cola. In 1994, President Clinton appointed Patrick as Assistant Attorney General for Civil Rights, the nation's top civil rights post. It has been Massachusetts people, schools, and institutions that have given Governor Patrick the opportunity to excel, and he sees his service as governor as pay-back for the opportunities the Commonwealth has given him.

Diane and Deval Patrick have been married for thirty years and have two adult daughters.

Doug Scott

Doug Scott is a Robotics and Information Technology teacher at Natick High School, where he was honored with the district's Jan Phlegar Award (Teacher of Year). He earned his undergraduate degree in business from Framingham State University, where he played ECAC hockey, and then completed his Masters of Secondary Education at Salem State University. In 2009, he earned an Educational Leadership Masters at Framingham State University. Doug's 12-year teaching career sprung from his experiences coaching hockey, which have been instrumental in helping him motivate students.

Sharing his personal interest in underwater exploration, Doug led students on innovative wreck discoveries, where they uncovered a lost steam wreck from 1915, and later, its accompanying barge. Through these adventures, he developed a working relationship with Woods Hole Oceanographic Institute. Mass Tech Leadership Council and Natick Education Foundations sponsored these trips, and students presented their results to Dr. David Switzer, the Marine Archaeologist for the state of New Hampshire. These exciting experiences, along with the help of Natick Soldier Systems Center, spawned the robotics curriculum at Natick High School, as well as several First Tech Challenge teams. This past FTC season, Doug was named MassFTC Compass Award winner (Coach of Year).

Middle School students in Natick have enjoyed attending the RoboNatick Land and Sea Robotics Camp for six years. At Natick High School, Doug has developed not only a robotics program, but also an IT program, and his A+ Certification and ACMT programs have certified over 200 students in the IT field. Many of Doug's students have competed in various IT competitions at state and national levels. Within the last few years, Doug has focused on engaging female students in IT and robotics through Girls' Robotics Day, Girl Scout outreach, and by nominating students for NCWIT awards.

Recently, Doug's Natick High School Lemelson MIT InvenTeam filed a US Patent for their Ice Search and Recovery vehicle. This year, students from the InvenTeam presented their invention to President Obama at the White House Science Fair. Doug has recently been honored to serve as a Lemelson MIT Master Teacher, assisting new teachers seeking to engage in inventive learning. A husband and father, Doug credits the continued sacrifices of his wife and daughter for allowing him to pursue the many educational adventures that have reached so many students.

Steve Vinter, Ph.D.

Steve Vinter is an Engineering Director at Google's office in Kendall Square in Cambridge, and has overseen the growth of the site from 15 software engineers in 2007 to over 500 today. Steve began programming in high school and received a Bachelor's degree in computer science from the University of Michigan. After working a few years as a software engineer he moved to Massachusetts to study at UMass, Amherst, receiving a Masters and PhD, studying distributed systems as the Internet was emerging. Steve has over 20 years of industry experience working in the Boston area and has focused on building products and services for hundreds of millions of users of mobile and cloud computing. Steve serves as the chair of the Talent Working Group and Executive Committee member of the Tech Hub Collaborative; Board member of the Kendall Square Association; Overseer at the Museum of Science, Boston; and Advisor to MIT's OEOP program; member of Governor's STEM Advisory Council; member of Citizen School's National Science and Technology Advisory Committee; and Board member of the Community Charter School of Cambridge. Steve co-founded the MassCAN initiative that is striving to offer every K-12 student in Massachusetts the opportunity to learn computer science.

Breakout Sessions

AM BREAKOUT I

Bootstrap - Teaching Algebra Through Video Game Programming

Time: 9:45am – 11:00am
Room: Meeting Room B (DCU - 3rd floor)
Strand: K-12 Education

Bootstrap is a curriculum module for students aged 12-16 which teaches algebraic and geometric concepts and problem solving strategies through computer programming and making video games. This session introduces the curriculum, beginning with the cognitive challenges of algebra for students (including current research in the field and known best practices for instruction), continuing with a discussion of why our contemporary notions of computer programming are often not appropriate for math instruction, and focusing on the specific arenas where it can be a powerful teaching tool. From there, attendees are given a broad overview of the curriculum, followed by real-world, hands-on instruction on the Bootstrap approach to teaching the order of operations, as well as introductory programming and image creation in the Racket language. Participants will leave with knowledge of how programming in an algebraic, functional language can lead to increased understanding of algebraic concepts such as functions and variables. In a recent interview with a 6th grade student from Boston, Kathleen was proud to share that her math grade went from a C- to a B due to how Bootstrap made her think about math; she now looks at math through a lens that works for her. Attend our info session to learn how impactful Bootstrap can be in your classroom!

SPEAKER

Emma Youndtsmith, Regional Manager, Bootstrap

Common Core and STEM – Will Standards and Assessments Make a Difference?

Time: 9:45am – 11:00am
Room: Grand Ballroom North (DCU - 3rd floor)
Strand: K-12 Education

This session will explore what the Common Core State Standards, which have been incorporated into the Massachusetts Curriculum Frameworks for English and math, and new assessments aligned to these standards mean for advancing STEM education in Massachusetts. Will these help our students gain the critical thinking, collaboration, and other applied skills that can help them succeed? Will the additional emphasis on reading complex, non-fiction texts across disciplines influence students' interest in STEM fields and help improve performance? These questions will be answered in discussion with business leaders, who are familiar with progress here and in other states and who can explain why this issue matters to employers. Educators who have been involved in developing and implementing the standards and assessments will provide their perspective about how these approaches are changing what is happening in the classroom. This will be an interactive discussion that will address concerns of participants and provide insight into what lies ahead.

MODERATOR

Angela O'Connor, Executive Director, TechNet

SPEAKERS

Mitchell Chester, Commissioner, Department of Elementary and Secondary Education
Anne McGrath, Community Engagement/Education Manager, Intel

Computer Science - The Essential Subject We're Not Teaching

Time: 9:45am – 11:00am
Room: Junior Ballroom (DCU - 3rd floor)
Strand: Digital Education

The session, intended for K-12 faculty and other stakeholders, will start with a summary of the state of play for CS Education in Massachusetts and the US. We will then break down what it means for students to have opportunities to meaningfully engage with CS before college. Presenters Kelly Powers (EDC/MassCAN) and Shay Pokress (PLTW) will touch on key areas such as curricula, teacher development, funding, and other issues we must address in order to bring CS to all districts.

AM BREAKOUT I

The second half of the session will be hands-on for all participants as we build projects using freely available apps and tools. Participants will leave with resources for integrating computer science into any grade level and subject.

SPEAKERS

Shaileen C. Pokress, Director of Instruction, Computer Science, Project Lead The Way
Kelly Powers, Director of Computer Science Teacher Leadership, MassCAN, EDC

Data Collection Tools in Out-of-School Time - Evaluating Program Quality & Student Interest

Time: 9:45am – 11:00am
Room: Meeting Room E (DCU - 3rd floor)
Strand: Out-of-School Time

STEM related after-school and out-of-school time programs are an important component of the ecosystem that supports student learning and interest in STEM subjects and careers. In Massachusetts, data collection tools that measure out-of-school time program quality and the impact these programs have on STEM learning outcomes are not widely utilized by the out-of-school time community of providers. In the summer of 2013, the Boston Private Industry Council (PIC), in partnership with the Massachusetts Afterschool Partnership (MAP) and Harvard Medical School and McLean Hospital's Program in Education, Afterschool, and Resiliency (PEAR), conducted a pilot study with summer programs affiliated with the state's Regional Pk-16 STEM Networks. The study piloted the tools developed by PEAR to evaluate program quality and student engagement in out-of-school time STEM programs. This session will focus on key findings and implications from the pilot study, an overview of data collection tools, and a discussion about efforts to build capacity across the state.

MODERATOR

Julia di Bonaventura, STEM Coordinator, Boston Private Industry Council

SPEAKERS

Ellen Dickenson, Program Director - Partnerships and STEM, Boston After School & Beyond
Marie St. Fleur, President and CEO, Bessie Tartt Wilson Initiative for Children
Raechel Ratliff, Director of Academic Support, West End House Boys & Girls Club
Dylan Robertson, Senior Manager of Research and Evaluation, Program in Education and Afterschool Resiliency

Engage with Engineering - Preparing a Science Department to Integrate Engineering Practices into its Courses

Time: 9:45am – 11:00am
Room: Grand Ballroom Center (DCU - 3rd floor)
Strand: K-12 Education

Baby Steps, Professional Development, and Fun!: One administrator's experience preparing a science department to infuse engineering into its science instruction. Over the past five years, I have slowly prepared my science department of 25 teachers to integrate engineering practices and content into their instruction. This work started due to the merger of our science and engineering programs at NNHS and has expanded due to the Framework for K-12 Science Education. During this workshop, I will provide an overview of the process, and then, participants will have the opportunity to take part in a number of the activities that we have done as a department including: a tuning protocol designed to identify opportunities for integrating engineering into existing science lessons; jigsaw protocols to examine the engineering components of the Framework for K-12 Science Education; and the Marshmallow Challenge, a structured conversation focused on the questions "What is science," "Why do we teach science," "What is engineering," and "Why do we teach engineering." The "what next?" portion of the workshop will cover an introduction to the integration of engineering into the Next Generation Science Standards (and the Draft Revised MA Frameworks for Science and Technology/Engineering).

SPEAKER

Amy Winston, Department Head, Science and Technology/ Engineering, Newton North High School

Fostering Student Motivation and Achievement - Research to Practice and Lessons Learned from the ITEST Program

Time: 9:45am – 11:00am
Room: Meeting Room D (DCU - 3rd floor)
Strand: Research and Practice

The STEM Learning and Research (STELAR) Center at EDC, Inc., supports the work of the National Science Foundation's Innovative Technology Experiences for Students and Teachers (ITEST) program. Since 2003, the ITEST program through research and model-building activities, has sought to build understandings of best practice factors, contexts, and processes contributing to K-12 students' motivation and participation in STEM, including information and communications technology (ICT), computing, computer sciences, data analytics, among others) that inform education programs and workforce domains. The session will share research to practice strategies and lessons learned from the STELAR center, ITEST project staff, evaluators, and teacher and student participants, related to what is needed to interest, engage and motivate students to pursue STEM education and career pathways.

AM BREAKOUT I

MODERATOR

Sarita Pillai, Director, STEM Learning & Research Center, EDC, Inc.

SPEAKERS

Michael Barnett, Associate Professor, Boston College
Tim Gay, Teacher, Boston Latin Academy
Neil Heffernan, Associate Professor, Worcester Polytechnic Institute
Jamie Larsen, PI/Co-founder of Edge@TERC
David Reider, Principal, Education Design
Carolyn Staudt, Curriculum Developer, Concord Consortium
Andy Trossello, Teacher, Waltham High School

Growing Up WILD - Family-style

Time: 9:45am – 11:00am
Room: Grand Ballroom South (DCU - 3rd floor)
Strand: Early Education

An active session about engaging families in supporting STEM learning at home by building their children's sense of wonder about nature and exploration of wildlife and the world around them. This session will provide an overview of a foundation for developing positive impressions about nature, while also building lifelong social and cognitive skills.

MODERATOR

Ruth-Ann Rasbold, Early Childhood Education Specialist and Massachusetts State Manager, New England Head Start Training and Technical Assistance Network, UMass Donahue Institute

SPEAKER

Pam Landry, Mass Wildlife Education Coordinator, Massachusetts Division of Fisheries & Wildlife

Increasing Accessibility to Algebra & Geometry for ALL Students

Time: 9:45am – 11:00am
Room: Perennials (Hilton Garden Inn - 2nd floor)
Strand: K-12 Education

Increasing Accessibility to Algebra & Geometry for ALL Students (IAAG) is a current recipient of the MA Department of Higher Education's STEM Pipeline Fund @Scale Project Initiative. This session will introduce participants to the IAAG course model and approach which offers foundational math content and pedagogical strategies for general education, inclusion, and special education teachers of grades 5 through 10. We will share how the course strengthens teachers' understandings of concepts in geometry and algebra. Throughout IAAG, teachers learn universal design strategies and techniques to increase accessibility of rigorous mathematics to a broad range of learners. Several of these strategies will be modeled during this session for participants to gain an inside look.

SPEAKERS

Wendy Cleaves, Mathematics Coordinator, Regional Science Resource Center @ UMass Medical School
Kelly Hilton, Mathematics Teacher, Framingham High School
Carol Hynes, Leominster Public Schools (retired)

Marlborough Public Schools - STEM Early College High School Model

Time: 9:45am – 11:00am
Room: Picknelly Board Room (Hilton Garden Inn - 2nd floor)
Strand: K-12 Education

Marlborough Public Schools will participate in a panel discussion about the development of a STEM Early College High School model. Topics discussed will include: supporting underclassman success through teaming, the integration of interdisciplinary project/problem-based learning with the MA Frameworks, and the development of upperclassman STEM pathways through coursework that has received the endorsement of both higher education and industry.

SPEAKERS

Ayora Berry, Academic Program, K-12 Program Manager, PTC, Inc.
Maureen Greulich, Executive Director of Secondary Education, Marlborough Public Schools
Lorretta Holloway, English Professor, Framingham State University
Heather Kohn, Math Teacher, Marlborough Public Schools
Daniel J. Riley, Director of MPS STEM Early College High School, Marlborough Public Schools

Massachusetts Integrative Science in Higher Education – What's Going On in 2014?

Time: 9:45am – 11:00am
Room: Meeting Room C (DCU - 3rd floor)
Strand: Higher Education - 4-year+

College graduates applying technology to real-world problems, such as the need for renewable energy or new antibiotics, require mastery of specific science, technology, engineering, and mathematics (STEM) knowledge and skills, as well as higher-order skills in science leadership (understanding when to apply certain fields of science), communication (how to bridge various disciplines), teamwork (how to collaborate synergistically), and interdisciplinary thinking (how to bring together several fields as needed to solve problems). This session will address the following question: what innovative college and university programs exist in the Commonwealth to meet these educational goals in the year 2014?

Representatives from UMass Amherst, Holyoke Community College, Olin College of Engineering, and Worcester Polytechnic Institute will describe their integrative-STEM (iSTEM) programs and answer audience questions. This session will be useful for

faculty and administrators in higher-ed who want to launch and/or refine integrative-STEM modules, courses, and/or programs. The panel will share the basics of setting integrative learning goals and developing activities to meet specific goals. The diversity of colleges and universities presenting in this session and the diversity of programs featured will demonstrate that there are many ways to reach a common set of learning goals, and hence, there is likely no right or wrong way. We encourage audience members to leave the session with a sense of the integrative-STEM teaching approach that best fits their institution's culture and strengths.

MODERATOR

Monica Joslin, Dean of Academic Affairs, Mass College of Liberal Arts

SPEAKERS

Lena Fletcher, Lecturer, University of Massachusetts Amherst
Joanne Pratt, Associate Professor of Biological Sciences, Olin College of Engineering
Kevin Wentworth, Professor of Biology, Holyoke Community College
Kris Wobbe, Associate Dean of Undergraduate Studies, Worcester Polytechnic Institute

Massachusetts' Computing Education Agenda - Opportunities and Equity for Work & Life

Time: 9:45am – 11:00am
Room: Conference Room 210A (DCU - 2nd floor)
Strand: Career Awareness/Workforce Development

The question has arisen as to whether all is being done to create and sustain a fully inclusive and sophisticated computer science workforce pool in Massachusetts. Three issues both topical and essential to the subject are discussed in this session.

1 - In Massachusetts, MassCAN, the Department of Elementary and Secondary Education (DESE), and Department of Higher Education (DHE) are collaborating to develop Computer Science standards, to make computer science an essential part of the curriculum at even early ages and, to have computer science count toward public college admission. Numerous stakeholders are involved and many are asking how computer science in the curriculum will play out in Massachusetts over the coming years.

2 - In an effort to increase capacity at post-secondary CS and IT programs, DHE is working with corporate and community groups as well as Massachusetts' 29 public colleges and universities with the goal of meeting industry demand.

3 - African Americans, Hispanics, and American Indians in computer science constitute smaller percentages of computer science degree recipients and of employed computer scientists than they do of the population. Full participation of the Massachusetts population in the technology economy is not being realized. Generating and sustaining interest and providing access are likely parts of the answers--but is this actually occurring?

And, there is the question of systemic change. Building sustainable capacity means market analysis, curricular and programmatic alignment, diversity pipeline efforts, and STEM engagement. Insuring that all elements work synergistically is critical to a successful outcome.

MODERATOR

Annemarie Levins, Associate General Counsel, Microsoft

SPEAKERS

Robbin Chapman, Associate Provost and Academic Director of Diversity and Inclusion, Wellesley College
Marilyn Decker, Director Science, Technology/Engineering and Mathematics (STEM), MA Department of Elementary and Secondary Education
Jim Stanton, Executive Director, MassCAN
Steve Vinter, Google Engineering Director for Massachusetts
Christine Williams, Director of Economic and Workforce Development, Lead, Technology Talent Initiative, Massachusetts Department of Higher Education

Massachusetts' STEM Workforce - Employer Needs and Policy Implications (I)

Time: 9:45am – 11:00am
Room: Showcase Corner (DCU - 1st floor)
Strand: Policy Panel

In a recent survey of employers from across the Commonwealth, 69% reported some difficulty hiring Massachusetts employees with the right skills for open positions. And when they were asked what sorts of jobs they were have trouble filling, six of the top ten responses were in STEM fields. When it comes to STEM jobs, supply is not meeting demand.

This reality has led to employers engaging in innovative ways to train workers for the short term, while also planning for their long term workforce needs. Whether it be through training programs, engaging more closely with schools, or simply helping to raise awareness, employers across the state are expending valuable resources toward the effort to ensure a long-term, sustainable pipeline of STEM competent workers.

This session will question employers about the realities of their workforce needs, and will explore the variety of ways – programmatic, philanthropic, and others – that they are responding. It will also seek employers' guidance on the essential elements of a framework for a public policy agenda that will meet the goals of the STEM Council and the state STEM Plan. Legislators will then respond to what they heard and help identify policy priorities moving forward.

This interactive session will provide an opportunity for employers to share best practices, for legislators to respond, and for the audience to both learn about and contribute to the ongoing dialogue with employers and policymakers and how they engage in the state's STEM agenda.

AM BREAKOUT I

MODERATOR

JD Chesloff, Executive Director, Massachusetts Business Roundtable

SPEAKERS

Donna Cupelo, Region President, Verizon
Chris Goode, Vice President Global Corporate Affairs & Chief Public Affairs Officer, EMC
Kevin Lorenc, Director of Communications, Mathworks
Beth Mitchell, Director of Engineering, General Dynamics
Senator Karen Spilka, Senate Majority Whip, Co-Chair – Legislative Tech Hub Caucus

Raising the Bar with a Low Threshold - Teaching the Computational Process in an Introductory Course to Computer Science

Time: 9:45am – 11:00am
Room: Conference Room 210B (DCU - 2nd floor)
Strand: Higher Education - 2-year

Most students in our introductory course to Computer Science (CIS140) have the desire to pursue careers in computing. However, they lack basic problem solving skills and adequate exposure to fundamental methods in logic, mathematics, and computational thinking. We will detail a step-by-step approach that expands our students' exposure to these concepts and skills in a way that is easily accessible to beginners, interesting enough to keep students engaged, and challenging enough to prepare these students for their degree path. Students begin the processes by designing and building physical models of a real world object. Next, students must analyze their processes and write instructions for building their models. Students are introduced to a vocabulary of basic commands for Processing, a Java-based programming environment focused on creating on visualizations. Using the vocabulary, students translate their instructions to computer code. Concepts such as abstractions, decomposition, modularity, selection, repetition, and object programming are highlighted through programming challenges related to the physical models students created. As a final experience, students are challenged to transfer these concepts to microcontroller programming and create projects that interact with the physical world.

SPEAKERS

Michael K. Penta, Instructor, Northern Essex Community College
Ethel Schuster, Professor, Northern Essex Community College

The Intersection of STEM and Healthcare - Developing a Diverse Workforce

Time: 9:45am – 11:00am
Room: Meeting Room A (DCU - 3rd floor)
Strand: Career Awareness/Workforce Development

While awareness of healthcare careers is expanding, students still usually only think of doctors and nurses as career options. In this session, we'll explore three healthcare career pathways that are STEM-focused and growing in the state: Medical Lab Technicians, Research Technicians, and Clinical Research Coordinators. The session will begin with some labor market information about these roles and where the jobs are. Attendees will meet employees working in these areas and learn about their daily responsibilities and the training required to enter the field. Employees will share their strategies for success and career pathway goals. Then, representatives from Dana-Farber Cancer Center will share two programs they operate in collaboration with many other Massachusetts healthcare organizations. In an effort to increase the pipeline of underrepresented populations in STEM, the programs spark the interest of high school and college students. With an emphasis on high-school and undergraduate students, the programs are designed and developed to create efficient and innovative ways to promote career exploration, student readiness and persistence, and meaningful partnerships.

MODERATORS

Candace A. Burns, Director of Workforce Development, Dana-Farber Cancer Institute
Karen Burns White, Deputy Associate Director of the Initiative to Eliminate Cancer, Dana-Farber Cancer Institute/Harvard Cancer Center

SPEAKERS

Susan Buckey, Project Manager, SCILS Initiative, Boston Private Industry Council
Rachada Hiranyaket, Workforce Development Program Specialist, Dana-Farber Cancer Institute
Research Technician, Dana-Farber Cancer Institute
Medical Lab Technician, Area Healthcare Institution
Kyle B. Riding, MLT Lecturer, UMASS Dartmouth
Latishya Steele, Student Research Training Coordinator, Dana-Farber/Harvard Cancer Center

AM BREAKOUT II

A Panel Discussion and Demonstration on Being an Effective Early Childhood STEM Educator

Time: 11:15am – 12:30pm
Room: Grand Ballroom South (DCU - 3rd floor)
Strand: Early Education

This session is intended for all early educators, education specialists, coaches, and mentors and is geared towards all levels of experience teaching STEM concepts within the early education environment. The goal of the session is to share with the panelists' best practices, strategies and resources from their own experiences with the audience, giving additional insight into better teaching practices as they relate to early childhood STEM education.

MODERATOR

Maureen McDonald, Early Childhood Education Specialist, University of Massachusetts Donahue Institute

SPEAKERS

Kathy D'Agostino, Owner/Director, Kathy's House Family Child Care & Preschool
Jody Figueridо, President, The Institute For Education and Professional Development
Tara Fitzgibbons, Education Manager, Greater Lawrence Community Action Council Head Start
Debra Garvin, Preschool Education Coordinator, Markman Children's Program
Patricia A Sawyer, Preschool Lead Teacher, Community Teamwork, Inc. – Head Start

Aligning Expectations Between Community College Life Sciences Programs and Life Sciences Companies

Time: 11:15am – 12:30pm
Room: Conference Room 210A (DCU - 2nd floor)
Strand: Career Awareness/Workforce Development

Many factors have contributed to the record shattering growth of the life sciences industry in Massachusetts: our strong public and higher educational institutions, research hospitals, large and small life science companies, public investment, and substantial industry investment by venture capitalists and the National Institutes of Health. Despite this magical combination, breaking into the field can seem elusive without proper training, prior experience, and strong networking connections. During this session, Mass Bio Ed Foundation will share labor market information for entry-level positions. We'll also hear how community colleges and bachelor's programs are aligning their instruction to meet employers' needs, as well as what type of candidates employers are looking for and hiring. And since recruiters play a big role in the hiring process for much of the industry, a recruiter will also be discussing the dos and don'ts of this process. Session attendees will receive handouts with information to take back to their students and career counselors.

MODERATOR

Lance Hartford, Executive Director, MA Bio Ed Foundation

SPEAKERS

Sandra Buerger, Adjunct Faculty, Northeastern University
Aron Clarke, Manufacturing Training Leader, Shire
Rhonda Doll, Adjunct Professor, Mount Wachusett Community College
Andrew Gifford, Account Executive, Lab Support (a division of On Assignment Inc.)

Building Successful Collaborative Partnerships for Effective STEM Professional Development for K-12 Educators

Time: 11:15am – 12:30pm
Room: Grand Ballroom Center (DCU - 3rd floor)
Strand: K-12 Education

MITS facilitates collaborations between formal institutions (schools, colleges, and universities), informal science institutions (museums, nature centers, science and technology centers), scientists, and engineers/researchers from local STEM industries to develop and provide one-week, two-week and hybrid (blended) graduate level professional development institutes. Over 100 partner organizations collaborate with MITS. Graduate credit is granted by 6 Massachusetts colleges/universities (Cambridge College; Fitchburg, Framingham, Worcester, and Salem State Universities; and MCLA). Partners collaborate to provide courses that integrate science content with pedagogy. The Institutes focus on increasing the capacity/skills of teachers to use inquiry-based, hands-on methods for teaching STEM content to raise student interest, develop the science and engineering practices, and implement the current MA Science and Technology Standards while planning how to transition to the new, revised standards. Instructors use a continuum of inquiry-based instructional methods, from confirmation through structured, guided, and open. As a result, teachers experience hands-on, minds-on, inquiry-based investigations that integrate across the disciplines, as they interact with STEM educators, scientists, researchers, engineers and product development specialists from STEM industries. MITS staff, educators from both formal and informal MITS partners, and teachers who have participated in the institutes will share why these partnerships are so successful and engage participants in some of the investigations from the 2013 and 2014 institutes. MITS also works with individual school systems to provide STEM professional development that supports systematic change. Through these programs, MITS develops collaborative partnerships for school systems that incorporate professional development sessions and modeling of inquiry investigations in the classroom.

SPEAKERS

Tanya Benoit, Science Teacher, Norton Public Schools
Meghan Bone, School and Teacher Programs Specialist, Berkshire Museum
David Kazmer, Professor, UMass Lowell
Jennifer Klein, Education Director, Museum Institute for Teaching Science

John Papadonis, Professor, Cambridge College
Sandra Ryack-Bell, Executive Director, Museum Institute for Teaching Science
Rachel Stronach, Executive Director, Lloyd Center for the Environment
Jason Walsh, Science Teacher, Holbrook Middle School
Kathy Zagzebski, Executive Director, National Marine Life Center

Engaging Students Through Authentic Research

Time: 11:15am – 12:30pm
Room: Grand Ballroom North (DCU - 3rd floor)
Strand: K-12 Education

An increasing number of studies indicate that engaging students in authentic STEM activities and real research can not only more deeply engage students, but also increase learning. However, conducting authentic research in the classroom has its challenges. During this interactive session, we will discuss resources and strategies to help classroom teachers incorporate real research into their classrooms. We welcome teachers with both stories of success and frustration to join in the conversation, along with the Biogen Idec Community Lab, NOVA Labs, and MIT's BioBuilders. Following the discussion, a list of all resources and strategies discussed will be created and then distributed to all interested persons.

MODERATOR

Tracy A. Callahan, Community Labs Director, Biogen Idec

SPEAKERS

Ralph Bouquet, NOVA Labs Outreach Coordinator, NOVA, WGBH
Don DeRosa, Director, CityLab, Boston University
Natalie Kuldell, BioBuilders Founder, Massachusetts Institute of Technology

Examining District and School Supports for Integrating K-12 STEM Education, Research, and Practice

Time: 11:15am – 12:30pm
Room: Picknelly Board Room (Hilton Garden Inn - 2nd floor)
Strand: Research and Practice

Current attention to STEM, Common Core Math Standards, and the New Generation of Science Standards brings new opportunities for districts and schools. But district and school administrators, curriculum coordinators, and teacher leaders also face implementation challenges that are daunting! This interactive session, designed with roundtable discussions focused on authentic examples of effective change, provides a forum for K-12 educators to join with STEM education researchers to explore systemic perspectives. Among the considerations are the ways in which leadership capacity is developed within schools, how professional relationships are fostered among teachers, and how providing instructional supports benefits those responsible for teaching math and science. Presenters will share findings from studies on school organizational structures and leadership practices, as well as district supports for effective implementation of math and science materials. Discussions will focus on questions such as dimensions of district and school-level support for implementing instructional materials, approaches to shifting school culture, factors that moderate the relationship between implementation and student scores, and features that mitigate achievement gaps. Presenters will share evidence of variations in leadership design and development and alignments between practice and policy.

Join us to learn about findings from educational researchers and K-12 practitioners, and look at ways they are collectively building on studies, craft knowledge, and expertise. We invite school and district administrators, teacher and curriculum leaders, researchers, and colleagues to attend. We encourage you to bring a team!

MODERATOR

Barbara Berns, Project Director, Education Development Center, Inc. (EDC)

SPEAKERS

Katerine Bielaczyc, Associate Professor of Education; Director, Hiatt Center for Urban Education, Clark University
Robert Knittle, Instructional Coach, Claremont Academy, Worcester
Kristen Reed, Research Scientist, Education Development Center, Inc. (EDC)
John Settlage, Professor, Science Teacher Education, Neag School of Education, University of Connecticut

Five New Innovative Pre-School STEM Curricula Developed Through a DEEC Grant Program

Time: 11:15am – 12:30pm
Room: Meeting Room D (DCU - 3rd floor)
Strand: Early Education

This session is intended for all early educators, education specialists, coaches, and mentors and is geared towards all levels of experience teaching STEM concepts within the early education environment. Each STEM curriculum was specifically developed via a competitive bid process to focus on a different aspect of STEM learning. The goal of the session is to introduce these five different curricula to educators and to share information about each model and how it can be used across the different types of EEC licensed programs. There will also be time for questions from the audience, and these materials will be made available via download for use in your programs for use as a resource.

MODERATOR

Ruth-Ann Rasbold, Early Childhood Education Specialist and Massachusetts State Manager, New England Head Start Training and Technical Assistance Network, UMass Donahue Institute

AM BREAKOUT II

SPEAKERS

Erin Demand, Director of the YMCA Center for Child Development, YMCA of Central Massachusetts
Joanna Doyle, Director of Training and Professional Development, Clarendon Early Education Services, Inc.
Kelly Hartnett, Development Coordinator, SHED Children's Campus
Nichole Olson, Senior Director of Child Care, YMCA of Central Massachusetts
Melissa Russell, Preschool Director, The Hundred Acre School at Heritage Museums and Gardens
Kris Scopinich, Director of Education, Mass Audubon
Linda Shottes-Bouchard, Executive Director, SHED Childcare Inc.
Karen Ulbin, Senior Program Coordinator, SHED Children's Campus

Global STEM Education - The Whys, Whats and Hows of Educating for the 21st Century

Time: 11:15am – 12:30pm
Room: Meeting Room E (DCU - 3rd floor)
Strand: Digital Education

Join leaders and practitioners of Global Education from Massachusetts and the nation for a discussion of important new developments in public policy and how innovative Global STEM education programs are impacting these developments. Discussion topics include: the US DOE's first comprehensive international strategy in education; the recent Asia Society-led report "Mapping the Nation," which covers success stories, best practices, and challenges faced by school districts; and a non-profit organization leading Global STEM education in our state.

MODERATOR

Larisa K. Schelkin, Executive Director, Global STEM Education Center; Fellow, Rennie Center for Educational Research & Policy

SPEAKERS

Dona M. Cady, Dean of Global Education, Middlesex Community College
Michael F. Fitzpatrick, Superintendent, Blackstone Valley School District
Jessica Kehayes, Executive Director, Education, Asia Society
Carol Woodbury, Superintendent, Dennis-Yarmouth Regional School District
Isa Zimmerman, Governor's STEM Advisory Council

How Do You Build It? A Practical Workshop on Designing an Integrative STEM Module

Time: 11:15am – 12:30pm
Room: Junior Ballroom (DCU - 3rd floor)
Strand: Higher Education - 4-year+

Engaging and enlarging the enthusiasm of talented students towards learning science, technology, engineering, and mathematics (STEM) remains a grand challenge at all levels of education. A growing trend in the Commonwealth of Massachusetts and across the nation is to exploit real-world problems as platforms for engaging interest in STEM. Because of the inherently multi-faceted nature of real-world problems, this new teaching approach may be called integrated STEM or "iSTEM" for short. Although naming this teaching approach is easy, developing useful curricular materials and pedagogical approaches remains quite challenging. In this workshop, we will apply a case study based approach to develop iSTEM curricular materials based on real-world problems that are of interest to the workshop participants. This workshop is intended for faculty and staff who wish to incorporate a unit of iSTEM into an existing STEM course or to build an entire iSTEM course. This workshop will be of interest to administrators who wish to gain a feel for the iSTEM case study approach and to understand the resources and faculty needed for iSTEM success. Workshop participants will learn how to apply reverse design, starting from learning goals, moving towards assessment strategies, and planning educational activities-in the context of real-world problems with substantial STEM components. Each participant should leave the workshop with the beginnings of an iSTEM case study that suits their particular educational and real-world interests.

SPEAKERS

Justin Fermann, Professor, Chemistry, University of Massachusetts Amherst
Adrienne Wooters, Professor, Physics, Massachusetts College of Liberal Arts

Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways I (Formerly Best Practices in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways)

Time: 11:15am – 12:30pm
Room: Showcase Corner (DCU - 1st floor)
Strand: Higher Education - 2-year

Facilitated by the Department of Higher Education (DHE) and the community colleges across the Commonwealth, significant efforts to transform the practices and pathways for students to enter the high demand STEM fields have been occurring. These efforts are generally integrated into pathways from the secondary level and the four-year institution level. The panelists will provide details on the STEM Starter Academy and Guided Pathways to Success in STEM Careers, two efforts currently led by DHE.

Panelists will share best practices that are significantly impacting the recruitment, retention, and completion occurring in their region.

SPEAKERS

Douglas Brown, Dean, Massasoit Community College
Yoav Elinevsky, Mount Wachusett Community College
Kate Sweeney, Middlesex Community College

AM BREAKOUT II

Inspire Invention - Programs and Strategies for Every MA School

Time: 11:15am – 12:30pm
Room: Perennials (Hilton Garden Inn - 2nd floor)
Strand: Innovation Entrepreneurship

Students in K-12 rarely have the opportunity to develop or research a new idea and then creatively explore its application to the world. Yet, enabling students to experience first-hand the fun and challenges of invention and entrepreneurship is critical to both developing their sustained interest in STEM learning and to building a future workforce that is ready to tackle today's challenges. Join this interactive session to hear from three dynamic speakers about programs and strategies that are successfully inspiring young inventors and entrepreneurs. Speakers include an industry sponsor of K-12 STEM programs, a STEM teacher in a school that offers two major innovation programs, and a student whose research recently led to international accolades. After panelists speak, a "speed dating" breakout of round-table groups will address key ideas. The goal is to draft a proposed plan on ways for Massachusetts to lead the charge and systemically promote K-12 programs that offer students direct experiences as innovators in schools statewide. Each round table will include a panelist or other stakeholder (student, teacher, parent, sponsor, and/or policy-maker). The round-table discussion will also enable educators and administrators to discuss how to bring these programs to their school or district. Finally, the moderator will review and summarize ideas from table discussions to submit to the STEM Summit organizers and the Governor's STEM Advisory Council.

MODERATOR

Linda Noonan, Executive Director, Massachusetts Business Alliance for Education

SPEAKERS

Nathan Han, Student, Boston Latin High School; Gordon E. Moore Award Winner, 2014 Intel International Science and Engineering Fair
Anne McGrath, Program Manager, Science Competitions and Education Relations Manager, Intel Corp.

STEM Integration for District Leaders - Strategically Planning for District-wide STEM Implementation

Time: 11:15am – 12:30pm
Room: Meeting Room A (DCU - 3rd floor)
Strand: K-12 Education

This session presents a program that guides school and district leaders in developing strategic plans for STEM integration. It is well established that high-quality STEM education is crucial for the future success of American students. Researchers recognize the critical role that school district leaders play in implementation of educational reforms. The STEM Education Center at Worcester Polytechnic Institute has developed and conducted a program that offers structured guidance to superintendents, principals, and other key district leaders in the process of planning for high quality STEM implementation.

The STEM Integration for District Leaders program provides long term, structured support for school and district leaders as they develop a plan for integrating STEM into their districts. The process of developing a comprehensive plan engages teams from several districts in reviewing models of successful STEM integration, developing a set of expected STEM outcomes, evaluating current STEM programs, identifying needs, exploring STEM curricula, developing models for collaboration with local businesses and higher education institutions, exploring funding opportunities, and developing an evaluation plan. This session shares the framework, content, and elements of the strategic plans as developed by the teams with the audience. Members of past and present participating districts will share how the process affected their districts, the challenges they faced from different, and the value of applying systemic view to STEM education. If time permits, a few exercises will help the audience draft desired outcomes for students and teachers that align with the MA STEM Plan 2.0.

SPEAKERS

John Clements, Principal, Nipmuc Regional High School, Mendon-Upton
Mia Dubosarsky, Director of Professional Development, the STEM Education Center at Worcester Polytechnic Institute
Andrew Hall, Principal, Elmwood Street Elementary School, Millbury
Jeanne Hubelbank, Program Evaluator, Worcester Polytechnic Institute
Mary Anne Moran, Associate Principal, Nipmuc Regional High School, Mendon-Upton

Strategies for Teachers to Support English Learners in Mathematical Reasoning and Communication

Time: 11:15am – 12:30pm
Room: Conference Room 210B (DCU - 2nd floor)
Strand: K-12 Education

The ever-increasing population of students who are English Learners (ELs) urgently needs access to opportunities to learn mathematical content in ways that integrate mathematical communication and reasoning. Diagramming has been shown to support students' mathematical problem-solving. Furthermore, if diagramming is used in conjunction with strategies to promote mathematical communication, it can provide necessary supports to English Learners that will also benefit all students in the mathematics classroom. Learn how teachers in a study of professional development have employed strategies that support students who are English Learners and align with the Standards for Mathematical Practice. During the session, you will create and analyze mathematical diagrams and consider the mathematical thinking and language involved, consider strategies that support students' access and production of mathematical language, and plan for your own work with students or teachers.

AM BREAKOUT II

SPEAKERS

Jill Neumayer DePiper, Research Associate, Education Development Center
Mark Driscoll, Managing Project Director, Education Development Center
Johannah Nikula, Project Director, Education Development Center

Taking STEM Learning Models to Scale in Gateway Cities - From Research to Policy and Practice

Time: 11:15am – 12:30pm
Room: Meeting Room B (DCU - 3rd floor)
Strand: STEM in Gateway Cities

Across the continuum from early education to higher education, Gateway City leaders are developing innovative STEM learning models to serve students with diverse backgrounds and needs. Educators, researchers, and policymakers attending this session will hear about how they can be a part of new efforts to demonstrate the success of these STEM learning models and bring them to scale.

SPEAKERS

Chad d'Entremont, Executive Director, Rennie Center for Education Research & Policy
Christopher J. DeLorey, Senior Vice President, Marsh & McLennan Agency
Eric Lieberman, Educator/Provider Support Specialist, Dept. of Early Education and Care
Timothy P. Murray, President and CEO, Worcester Regional Chamber of Commerce
Mark P. Rice, Vice Provost for Innovation and Entrepreneurship, Worcester Polytechnic Institute

The STEAM Engine - An Un-Conference for Out-of-School Educators, Directors, Volunteers & the Flight Crew (Part I)

Time: 11:15am – 12:30pm
Room: Atrium (DCU - 3rd floor)
Strand: Out-of-School Time

Finally, a workshop as innovative as your teaching. Join a group of informal STEAM/STEM educators to ask the big questions, ponder the challenges, and develop action plans that might just take your program from here to the moon. Participants will be led though an opening exercise to jog your brains and fuel your rockets. The rest is up to you - you select the table discussion topics, find your shipmates, and head into the stratosphere of all things STEAM. Let us know what topics to include by filling out this short online form: http://bit.ly/STEMOST

Facilitators will record table discussions during the session and report back key thoughts to the other groups. Notes from both sessions will be shared online after the summit for further collaborations and discussions among stakeholders. You might not be a brain surgeon or a rocket scientist, but you probably want to inspire a couple of kids to be - join this session and see what we create together.

MODERATORS

Gerald Brody, Past President, Retirees' School Volunteer Association
Connie Chow, Executive Director, Science Club for Girls
Sung Kim, Events & Logistics Manager, Cambridge Science Festival, MIT Museum

Working for the Nation's Space Program: NASA Resources in the Commonwealth

Time: 11:15am – 12:30pm
Room: Meeting Room C (DCU - 3rd floor)
Strand: Career Awareness/Workforce Development

The U.S. space program is pre-eminent in the world, landing the first man on the moon and enabling discoveries that impact almost every aspect of our life. Massachusetts has made significant contributions to the program starting with the design of the guidance system for the Apollo Mission and continuing with cutting-edge aerospace research at the state's universities and colleges to support NASA missions.

In 1988, Congress established the Space Grant Program under the NASA Authorization Act to harness and focus the creativity and ingenuity of leading space science researchers and educators to build initiatives to "inspire and prepare" U.S. students to enter STEM careers. The Massachusetts Space Grant, a consortium of 4-year colleges and universities, community colleges and public outreach organizations, was one of the first such programs to be established in the country. Its primary goal is to represent NASA in Massachusetts, to promote public understanding of and support for space exploration and research, and to encourage students to choose courses of study that will lead them to enter the technical work force. One of MASGC's primary activities is providing fellowships to Massachusetts students to enable them to engage in study and research projects and to attend meetings that they would not be able to do without Space Grant support.

Panelists, including NASA Astronaut and Massachusetts resident Sunita Williams, will describe the broad range of STEM careers available with NASA, and the unique opportunities and resources available to students and teachers through the Space Grant Program. Student participants will reflect on their experiences in the program and on the academic and career paths they are pursuing.

MODERATOR

Raji Patel, Co-director, Massachusetts Space Grant Consortium

SPEAKERS

Jillian Bolinger, Student, University of Massachusetts/Dartmouth
Christina Holman, Student, Wellesley College
Sunita Williams, NASA Astronaut

BLOSSOMS - Active Learning for High School STEM Classes, with Professional Development for Teachers

Time: 2:30pm – 3:45pm
Room: Perennials (Hilton Garden Inn - 2nd floor)
Strand: K-12 Education

BLOSSOMS = Blended Learning Open Source Science Or Math Studies. http://blossoms.mit.edu The free Internet-based BLOSSOMS lesson repository offers teachers highly interactive, MIT-vetted lessons under a Teaching Duet pedagogical model – half the learning derives from the video teacher and half from active learning in class, guided by the in-class teacher. The focus is on developing critical thinking skills, fostering student excitement about math and science, seeing relevance of STEM in our everyday lives, and developing with the students a cross-cultural awareness, sensitivity, and appreciation. The program is directed away from rote memorization and teaching to a test. Each BLOSSOMS lesson requires one in-class session to complete. Each student is sitting in her/his regular seat with electronic gadgets OFF. The in-class teacher directs the class. STEM teachers view the PD (Professional Development) aspects of BLOSSOMS just as importantly as the in-class teaching applications. The BLOSSOMS team has been working with the Massachusetts Department of Elementary and Secondary Education, creating new BLOSSOMS lessons for PD first and in-class use second. The program has created new lessons to serve as PD for Mass. high school science teachers and to demonstrate ways of teaching in the new Mass.-modified NGSS environment. Award-winning Mass. STEM public school teachers made these new lessons. The BLOSSOMS workshop will provide an overview of BLOSSOMS, show illustrative segments of new BLOSSOMS lessons, demonstrate application to PD, and introduce ways of designing lessons with the highly interactive BLOSSOMS pedagogical framework. Participating teachers will be asked to outline their own ideas for new lessons.

SPEAKER

Richard C. Larson, Professor, MIT

Connecting Classroom Strategies to Real-World STEM through an Integrated Learning Approach

Time: 2:30pm – 3:45pm
Room: Grand Ballroom South (DCU - 3rd floor)
Strand: K-12 Education

All STEM disciplines have a direct application in industry. Their application is driven by an interdisciplinary product development process in which professionals from a variety of disciplines work in concert to take an idea and transform it into a product that solves real problems. In the classroom, making the connections to real world, industry applications is accomplished using an integrated learning approach, which brings both STEM and non-STEM disciplines together through an interdisciplinary, project-based learning model. This allows students to experience the full breadth of the product development process and to take an active role in innovation and problem-solving. In this session, participants will explore how to bring these real-world STEM concepts, tools, and practices into the classroom by focusing on integrated learning through the lens of product development.

This workshop will include a brief group discussion to explore integrated learning and product development and their connections to STEM education as it relates to workforce alignment, student engagement, and educator skills. The majority of the session will be devoted to small break-out activities led by K-12 educators who are actively implementing integrated learning strategies in their classrooms and schools. By participating in this session, educators will have the opportunity to connect with peers, share ideas, learn from practitioners in the field, and walk away with resources for bringing integrated learning and product development into the classroom. Additionally, we will review professional development resources available to educators through the McAuliffe Center and industry partner PTC for implementing integrated learning in their classrooms.

SPEAKERS

Lea Campbell, Educator, Glover Elementary School
Anna Cotton, Educator, Martha's Vineyard Regional High School
Irene Porro, Director, Christa McAuliffe Center, Framingham State University
Alyssa Walker, Professional Development Manager, Christa McAuliffe Center, Framingham State University
Jerry Zolobkowski, Educator, Agawam Junior High School

Creating Intentional Learning Opportunities - Infusing STEM into Your Preschool Classroom

Time: 2:30pm – 3:45pm
Room: Meeting Room E (DCU - 3rd floor)
Strand: Early Education

This session shares an innovative early childhood curriculum that was developed with support from the Department of Early Education and Care by Heritage Museums & Gardens for The Hundred Acre School, their new preschool program. The presenters will share the components of this curriculum, which infuses Science, Technology, Engineering, and Math throughout the day, and how they capitalize on the resources available in their environment to encourage children's investigations. This curriculum will be used as a springboard for helping educators to refocus their own classrooms into STEM-inspired environments that incorporate indoor and outdoor learning opportunities. Participants will see examples and get ideas for: turning a traditional circle time into an opportunity to develop hypotheses that will be tested through play explorations during the day; transforming the blocks area into an engineering station, where children devise ways to plan and construct models out of blocks; moving from dress-ups to a place where children can explore different STEM careers; altering the writing area into an observation station for students to write and

draw their new discoveries; and utilizing the playground to teach math concepts as children explore measurement, patterns, and shapes they find outside.

SPEAKERS

Kori Bardige, Early Childhood Special Education Consultant, Learning Circle Consulting
Melissa Russell, Preschool Director, The Hundred Acre School at Heritage Museums & Gardens

Cultivating our Next-Generation STEM Workforce - A Joint Presentation on Early Undergraduate Research and Mentoring Programs from Bridgewater State University and the University of Massachusetts

Time: 2:30pm – 3:45pm
Room: Grand Ballroom Center (DCU - 3rd floor)
Strand: Higher Education - 4-year+

In an ideal world, every undergraduate majoring in STEM would engage in research, have a strong network of formal and informal mentors and advisors, volunteer for a variety of STEM outreach activities, and participate in a rich offering of STEM-related social events. The positive impact of this suite of opportunities to improve retention and graduation rates is well documented -- both for STEM students in general and for underrepresented minority students in particular.

In this session, participants will learn about two models for early involvement in undergraduate research and mentoring programs designed to improve STEM retention: the STREAMS Summer Program at Bridewater State University and the UMass Science Ambassadors Program. Having completed its fifth year, the STREAMS Summer Program relies on immersion in undergraduate research. Students live on campus for three weeks, and complete two college classes including a writing intensive First Year Seminar call "Scientists at Work" which introduces students to critical thinking and writing about science research and revolves around the students' research projects. The UMass Science Ambassadors Program is based on a hierarchical mentoring model that has already proven to enhance retention and graduation rates of STEM students, particularly those from underrepresented minority groups. It is designed to include components of each of the most successful approaches to STEM student retention: research, mentoring, advising, outreach and socialization.

In this town-hall style session, participants will discuss issues surrounding creating scalable models for mentoring and undergraduate research for STEM student retention at the local institution based on these two models.

MODERATOR

Frank Hall, Visiting Scholar, Worcester Polytechnic Institute; Professor of Earth Sciences, Worcester State University

SPEAKERS

Jenna Farrell, Mentoring Coordinator, UMass STEM Ambassadors Program
Meghan Gerson, Director of STEM Ambassadors Program, University of Massachusetts Amherst
Thomas P. Kling, Professor of Physics, Bridgewater State University
Stephen Waratuke, Associate Professor of Chemistry, Bridgewater State University

Digital Resources for STEM - What They Look Like in the Classroom

Time: 2:30pm – 3:45pm
Room: Grand Ballroom North (DCU - 3rd floor)
Strand: Digital Education

Concord Consortium, PBS/NOVA, MIT and Mass Audubon will present the latest digital resources to engage students in science, engineering, and math. Join us for a panel presentation where content developers, teachers, and students share the benefits of incorporating these open-source digital resources into the classroom. Engage in discussion about how to integrate these resources into curricula to provide vibrant, meaningful activities that support key content and skills, and hear directly from teachers and students who have used these resources.

MODERATOR

Kim Spangenberg, Manager of STEM, The Virtual High School

SPEAKERS

Rachel Connolly, Director of STEM Education, WGBH
Chad Dorsey, President and CEO, The Concord Consortium
Brooke Havlik, Education Manager, NOVA
Elizabeth Murray, Project Manager, MIT BLOSSOMS
Renata Pomponi, Visitor Education and Interpretation Coordinator, Mass Audubon Drumlin Farm

Infant/Toddler STEM Session - Engaging Educators with Diverse Hands-on Ways to Introduce Science and Mathematics into the Infant and Toddler Learning Environment

Time: 2:30pm – 3:45pm
Room: Meeting Room D (DCU - 3rd floor)
Strand: Early Education

This session is intended for all early educators with a specific interest in infant/toddler early STEM learning. This session is geared to educators, education specialists, coaches, and mentors. This session will appeal to educators with all levels of experience teaching STEM concepts within the early education environment. The goal of the session is to share best practices, strategies, and resources from the panelists' experiences, so that the audience

receives additional insights into better teaching practices related to infant and toddler early childhood STEM education.

MODERATOR

Ruth-Ann Rasbold, Early Childhood Education Specialist and Massachusetts State Manager, New England Head Start Training and Technical Assistance Network, UMass Donahue Institute

SPEAKERS

Sharon Adams, Infant Toddler Specialist, UMass Donahue Institute Head Start Training and Technical Assistance Consortium, Vermont Center
Jeanne Burkes, Infant Toddler Specialist, UMass Donahue Institute Head Start Training and Technical Assistance Consortium, Massachusetts Center

Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways II

Time: 2:30pm – 3:45pm
Room: Meeting Room C (DCU - 3rd floor)
Strand: Higher Education - 2-year

Facilitated by the Department of Higher Education (DHE) and the community colleges across the Commonwealth, significant efforts have been occurring to transform the practices and pathways available to students seeking to enter high demand STEM fields. These efforts are generally integrated into pathways from the secondary level to the four-year institution level. The panelists will provide details on their engagement with the STEM Starter Academy and the Guided Pathways to Success in STEM Careers efforts that are led by DHE.

Panelists will share best practices that are significantly impacting the recruitment, retention, and completion that is occurring in their regions. The panel will provide examples of colleges supporting under-represented populations, academic maps, corporate engagement, and summer programming.

SPEAKERS

Rick Bsharah, Cape Cod Community College
Charles Kaminski, Berkshire Community College
Ethel Schuster, Professor, Northern Essex Community College

Massachusetts Integrative Science in Higher Education – Assessment: How Do You Know It's Working?

Time: 2:30pm – 3:45pm
Room: Conference Room 210B (DCU - 2nd floor)
Strand: Higher Education - 4-year+

Once you have designed a new course or program, how do you know if it is working? And what if you are not only looking to assess content knowledge, but also looking at higher-order skills such as science leadership (understanding when to apply certain fields of science), cross-disciplinary communication (how to bridge various disciplines), teamwork (how to collaborate synergistically), and interdisciplinary thinking (how to bring together several fields as needed to solve problems) – major goals of integrative STEM courses. This workshop brings together panelists from UMass Amherst, Holyoke Community College, and Merrimack College to share their expertise on the role of assessment in integrative STEM and will provide an overview of the assessment process, as well as examples of well-designed assessment plans. This interactive session will include examples of establishing learning goals, making student outcomes measurable, and analyzing assessment data. The session will be useful for faculty and higher education administrators who look to assess learning within one course, across multiple courses, across a program, or across an entire university.

MODERATOR

Scott Auberbach, Professor, Chemistry, University of Massachusetts Amherst

SPEAKERS

Jack Mino, Professor of Psychology, Holyoke Community College
Martha Stassen, Assistant Provost for Assessment and Educational Effectiveness, University of Massachusetts Amherst

Massachusetts' STEM Workforce - Employer Needs and Policy Implications (II)

Time: 2:30pm – 3:45pm
Room: Meeting Room B (DCU - 3rd floor)
Strand: Policy Panel

In a recent survey of employers from across the Commonwealth, 69% reported some difficulty hiring Massachusetts employees with the right skills for open positions. And when they were asked what sorts of jobs they were have trouble filling, six of the top ten responses were in STEM fields. When it comes to STEM jobs, supply is not meeting demand.

This reality has led to employers engaging in innovative ways to train workers for the short term, while also planning for their long term workforce needs. Whether it be through training programs, engaging more closely with schools, or simply helping to raise awareness, employers across the state are expending valuable resources toward the effort to ensure a long-term, sustainable pipeline of STEM competent workers.

This session will question employers about the realities of their workforce needs, and will explore the variety of ways – programmatic, philanthropic, and others – that they are responding. It will also seek employers' guidance on the essential elements of a framework for a public policy agenda that will meet the goals of the STEM Council and the state STEM Plan. Legislators will then respond to what they heard and help identify policy priorities moving forward.

PM BREAKOUT

This interactive session will provide an opportunity for employers to share best practices, for legislators to respond, and for the audience to both learn about and contribute to the ongoing dialogue with employers and policymakers and how they engage in the state's STEM agenda.

MODERATOR

JD Chesloff, Executive Director, Massachusetts Business Roundtable

SPEAKERS

Al Bunshaft, Senior Vice President, Dassault Systems
Representative Ann-Margaret Ferrante, Vice Chair, Committee on Economic Development & Emerging Technologies, Co-Chair – Legislative Tech Hub Caucus
Annemarie Levins, Associate General Counsel, Microsoft
Marcy Reed, Massachusetts President, National Grid
Beth Schumacher, Manager, Military Thermal System Design Engineering Technologies, GE Aviation

Preparing Students for Careers in Advanced Manufacturing

Time: 2:30pm – 3:45pm
Room: Picknelly Board Room (Hilton Garden Inn - 2nd floor)
Strand: Career Awareness/Workforce Development

The pace of change in global manufacturing is faster right now than at any time in recent history. The manufacturer of today and of the future runs on sophisticated technologies that power improved processes and innovations. More than ever, students entering this field need both technological and academic skills in order to have successful and fulfilling careers. Meanwhile, Massachusetts' schools face challenges when trying to access the best software and technology tools to offer industry-driven education and training. In response, Siemens Corporation developed the Academic Partnership Program, an innovative public-private partnership between Siemens Corporation, Massachusetts Manufacturing Extension Partnership (MassMEP), and Quinsigamond Community College to provide Massachusetts schools and colleges free access to Siemens' NX Software, as well as technical assistance and supports to help improve an institution's ability to develop top-notch engineers and technologists for the manufacturing industry. This is the most comprehensive program of its kind, offering software that can be used in a variety of academic settings at every level – from middle schools, to community colleges, to graduate engineering research programs. Learn more about the Academic Partnership Program, and find out how your institution can access these free resources, too. Hear from Massachusetts schools that are integrating these tools in their academic programs. Discover how schools are leveraging these tools and other institutional, regional, and state supports to accelerate their capacity to train and educate future workers for the advanced manufacturing industry.

MODERATOR

Leslie Parady, Project Manager, MassMEP

SPEAKERS

Lee Duerden, Assistant Professor and Program Coordinator, Manufacturing Technology, Quinsigamond Community College
Margaret Gentile, Development Engineer, Siemens Industry, Inc.
Tom Matuszak, Instructor, Machine Technology, McCann Technical School
William Mulholland, Vice President for Community Education and Workforce Development, Berkshire Community College

Purpose, Passion and the Quest for 'Why?': Today's College Students Yearn To Make Sense Of STEM

Time: 2:30pm – 3:45pm
Room: Conference Room 210A (DCU - 2nd floor)
Strand: Innovation Entrepreneurship

'Weed-em-out' courses, dry lectures, rigorous math and an array of prerequisites stamp the love of learning out of young college students. Some universities are getting it right, but overall not so much. Fewer than 40% of students who enter college intending to major in a STEM field complete a STEM degree, according to the President's Council of Advisors on Science and Technology (PCAST). Our nation needs us to produce 1 million more STEM college graduates than predicted. So how do we as K-12 educators, who care about the future of our most promising students, ensure a successful handoff to our collegiate counterparts? A new program called the University Innovation Fellows empowers college students to develop a culture of creativity and innovation. These students are developing strategies and learning opportunities that engage peers in project-based learning and human-centered design. The model of empowering students develop their voice serve as partners to faculty in bringing about institutional change has been a fruitful one, yielding innovation spaces, new courses and has even attracted alumni investment in new programs. University Innovation Fellows believe connecting high school graduates to a creative community of makers & innovators is the answer. Connecting Freshmen to learning opportunities that inspire students based on relevant and real-world problems as soon as they arrive at college is a means to keeping students engaged in STEM. As 110 University Innovation Fellows at 74 schools work to expand and attract peers to Innovation & Entrepreneurship programs, the opportunity exists to create a bridge for high school students to a cool creative culture of like-minded students who can introduce and engage them in the innovation ecosystem. Recognized by the President's Office of Science & Technology Policy, the University Innovation Fellows is a program of the Epicenter, the Center for Engineering Pathways to Innovation, and is funded by the National Science Foundation. In this session, participants will be introduced to the work of two Fellows who also volunteer their time in local K-12 schools to inspire young STEM enthusiasts. Learn what triggered their interests in STEM and hear their recommendations for high schools to guide students towards successful STEM careers.

MODERATOR

Humera Fasihuddin, Sr. Program Officer, University Innovation Fellows, NCIIA

SPEAKERS

Ellery Addington-White, Computer Science student, Beloit College
Kevin Desjardin, Civil Engineering student, University of Massachusetts, Lowell

Teaching with MIT's App Inventor in your Classroom - Bring Mobile App Development to Life in Your 5-12 Curriculum

Time: 2:30pm – 3:45pm
Room: Junior Ballroom (DCU - 3rd floor)
Strand: K-12 Education

This 75 minute session will introduce all teachers from any discipline to App Inventor. Teachers will have the opportunity to create their own APP and connect how APP Creation with MIT's App Inventor can enhance their subject matter projects while addressing many of the Common Core standards. Teachers will be provided with lessons, mapped to standards that they can adopt in their classroom across all disciplines. Teachers with or without computer science experience will be able to introduce computing into their own discipline. Kelly Powers will present curriculum formats that have proved successful in both the middle and high school environment. She will demonstrate two apps and engage the audience in creating their first Mobile App. These two apps will serve as examples of how to use App Inventor to efficiently and meaningfully engage students in computing, even when they have little prior experience. The session will end with an open discussion about Computer Science Education in Massachusetts. Opportunities to learn more will be highlighted, and pointers to resources available to App Inventor educators will be provided.

SPEAKERS

David Petty, Teacher, Winchester High School
Kelly Powers, Co-president, Computer Science Teachers Association of Greater Boston

The Gateway to STEM Careers is Being Future Ready

Time: 2:30pm – 3:45pm
Room: Meeting Room A (DCU - 3rd floor)
Strand: K-12 Education

Future Ready Massachusetts is the Commonwealth's vehicle for communicating information to students, families, and influential adults about the resources available to help prepare students for college and career. Future Ready provides information about how to meet these expectations through three key messages--Start Now, Aim High, and Look Beyond. Panelists will present a diverse set of replicable program models which use STEM to engage student interest, inspire them to pursue further study in STEM topics, and set students on a path to success in STEM focused degrees and career training. Heather Mead, Director of Programming, will discuss the Heritage Museums and Gardens' unique STEM programming for pre-K and kindergarteners, a recent step to open a STEM focused pre-school for four and five year olds, and how the museum weaves STEM into an eclectic range of topics such a horticulture, early American tools, and engineering. Lisa Freed, STEM Program Manager for iRobot, will discuss iRobot's work with schools and explain how business can effectively work with schools to motivate and inspire students and to expose them to the many ways their academic studies are relevant. Dr. Felicia Griffin-Fennell, Director of the STEM Starter Academy, will discuss the opportunities students have to meet and work alongside STEM professionals at the STEM Starter Academy at Springfield Technical Community College while completing a college readiness course and earning college credit.

MODERATOR

Jackney Prioly, Director, Future Ready Massachusetts, Massachusetts Business Alliance for Education

SPEAKERS

Lisa Freed, STEM Program Manager, iRobot
Felicia Griffin-Fennell, Director, STEM Starter Academy
Heather Mead, Director of Programming, Heritage Museums and Gardens

The STEAM Engine - An Un-Conference for Out-of-School STEAM Educators, Directors, Volunteers & the Flight Crew (Part II)

Time: 2:30pm – 3:45pm
Room: Atrium (DCU - 3rd floor)
Strand: Out-of-School Time

Finally, a workshop as innovative as your teaching. Join a group of informal STEAM/STEM educators to ask the big questions, ponder the challenges, and develop action plans that might just take your program from here to the moon. Participants will be led though an opening exercise to jog your brains and fuel your rockets. The rest is up to you - you select the table discussion topics, find your shipmates, and head into the stratosphere of all things STEAM. Let us know what topics to include by filling out this short online form: http://bit.ly/STEMOST

This second session will allow new topics and/or more in depth discussion stemming from the earlier session. Facilitators will record table discussions during the session and report back key thoughts to the other groups. Notes from both sessions will be shared online after the Summit for further collaborations and discussions among stakeholders. You might not be a brain surgeon or a rocket scientist, but you probably want to inspire a couple of kids to be - join this session and see what we create together.

MODERATORS

Sarah Dunton, Director of Education, Girls Inc of Holyoke
Patricia Hallberg, CEO, Girl Scouts of Central and Western Massachusetts

Uniting Public and Private Partners to Ignite Moments of STEM Discovery

Time: 2:30pm – 3:45pm
Room: Showcase Corner (DCU - 1st floor)
Strand: Career Awareness/Workforce Development

The demand for professional in the STEM fields is projected to dramatically outpace the supply over the coming decades, with three million anticipated STEM job openings by 2018 but no increase in the proportion of students graduating with STEM degrees. In light of this gap, it is essential that the public and private sectors partner together to ignite moments of STEM discovery for students through real-world, hands-on learning in the classroom. During this session, participants will hear from a variety of private and public sector organizations - Biogen Idec, Citizen Schools, EMC, TripAdvisor, and the United Way - as representatives from each STEM partner share how they envision and implement STEM education in public school classrooms; evaluate and measure student impact and explore how hands-on STEM learning has an immediate impact on student engagement and interest in STEM; and identify and address key challenges to making private-public partnerships a success.

MODERATOR

Carolyn Roscoe, Director of Civic Engagement, Citizen Schools

SPEAKERS

Jessica Anderson, Director of Community Involvement, EMC
Tracy Callahan, Community Lab Director, Biogen Idec
Michael Kubiak, Chief Research and Evaluation Officer, Citizen Schools
Sarah Link, Assistant Vice President, Community Impact, United Way
Ranga Natarajan, Experienced User Experience & Mobile Product Manager, TripAdvisor

Exhibits

Full exhibit descriptions are available online at: www.mass-stem-summit.org

1

Sponsor: Boston University

2-4

Media Partner: WGBH
Title: STEM Programs at WGBH
Organization: WGBH
Strand: Early Education; K-12 Education; Out-of-School Time; Digital Education
Overview: WGBH is recognized as one of the nation's leading producers of media-based resources to support teaching and learning, focused on both content and methodology at all grade levels. This year, the WGBH exhibit will feature: NOVA Labs, PBS LearningMedia™, Plum Landing, DesignSquad Nation, and Resources for Early Learning.

5

Title: Traveling Science Workshops: Hands-on Science that Sparks Discovery in Pre-K-8 Classrooms
Organization: The Discovery Museums
Strand: K-12 Education
Overview: The Discovery Museums' Traveling Science Workshops were launched in 1992 and now serve more than 26,000 students each year through a set of 18 topics that support MA state curriculum standards and STEM initiatives

6

Title: Museum Institute For Teaching Science Professional Development Programs and Resources for K-12 Educators
Organization: Museum Institute for Teaching Science (MITS)
Strand: K-12 Education
Overview: STEM Professional Development programs for teachers, from teachers

7

Title: D-Lab Youth Outreach Program
Organization: Massachusetts Institute of Technology
Strand: K-12 Education
Overview: D-Lab challenges and inspires new generations of talented students to use their math, science, engineering, social science and business skills to tackle global poverty issues

8

Title: HMS MEDscience
Organization: Harvard Medical School
Strand: K-12 Education; Out-of-School Time; Innovation/Entrepreneurship; Career Awareness/ Workforce Development; Research and Practice
Overview: Educational initiative designed to inspire and engage disadvantaged urban and suburban students through medical simulation, inspiring them to pursue college majors and/or careers in STEM disciplines

9

Sponsor: Worcester Polytechnic Institute (WPI)

10

Title: Engineering Design in Professional Development for the Full Range of K-12 Grade Level Educators
Organization: The STEM Education Center at WPI
Strand: K-12 Education; Digital Education
Overview: Three activity-, project-, and problem-based STEM curricular programs and their associated teacher professional development

11

Title: The STEM Education Center at WPI
Organization: Worcester Polytechnic Institute
Strand: K-12 Education
Overview: Licensure and degree programs, professional development for educators, and research on teaching and learning

12

Title: Mass Academy of Math and Science at WPI
Organization: Mass Academy of Math and Science at WPI
Strand: K-12 Education
Overview: Math and science within a comprehensive, interactive academic program

Booth Number in Exhibit Hall **L** Exhibit Located in Lobby ★ Biogen "Ignite the Power of STEM" Grant Recipient

EXHIBITS

13 **Title:** Science & Engineering Practices in & Beyond Classrooms: Student Independent Research & Science Fairs
Organization: Massachusetts State Science & Engineering Fair (MSSEF)
Strand: K-12 Education; Out-of-School Time; Innovation/Entrepreneurship
Overview: Helping students learn to think the way a professional scientist or engineer does through science fair programs

14 **Title:** Girls with a Z: Using the Model Organism Zebrafish to Engage High School Girls in Experimental Biology and Research Design
Organization: Science Club for Girls
Strand: Out-of-School Time
Overview: Using model organism zebrafish to engage high school girls in experimental biology and research design

15 **Sponsor:** EcoTarium

16 **Sponsor:** Intel

17 **Sponsor:** Massachusetts Commission for the Blind

18 **Title:** Science Education for New Civic Engagement and Responsibilities (SENCER)
Organization: National Center for Science and Civic Engagement
Strand: Higher Education
Overview: Applying the science of learning to the learning of science, all to expand civic capacity

19 **Title:** Greengineering and The Office of Ingenuity, an Educational Design Studio
Organization: Newton Public Schools
Strand: K-12 Education; Innovation/Entrepreneurship
Overview: Grappling with "ginormous" global issues, locally

20 **Title:** Project Based Learning through 3-D Design, Printing and Manufacturing
Organization: Mashpee Public Schools
Strand: K-12 Education; Innovation/Entrepreneurship
Overview: Students in grades 7-12 using technology in solving real-world problems

21 **Title:** Natick Soldier Research, Development, and Engineering Center STEM Outreach
Organization: Natick Soldier Research, Development and Engineering Center
Strand: Career Awareness/Workforce Development
Overview: We share our technical story of the science behind the Soldier with the students and educators of today, in order to inspire the great leaders and problem solvers of tomorrow

22 **Title:** Bridging the Gap from Theory to Understanding Using Interpretive STEM Through FABLab Enhanced Education
Organization: FABLabs for America, Inc, and The FAB Foundation, Inc.
Strand: K-12 Education; Higher Education; Out-of-School Time
Overview: A learning efficient model that uses an interpretive STEM focus to promote: critical thinking; collaboration; design thinking; problem solving; and application of interdisciplinary knowledge

23 **Title:** The Wheaton College Autonomous Learning Laboratory and Makerspace (WHALE)
Organization: Wheaton College
Strand: Higher Education; Innovation/Entrepreneurship; Career Awareness/Workforce Development; Research and Practice
Overview: Interest-based learning in areas such as 3D printing/scanning/modeling, robotics, wearable computing/fiber arts (e.g., knitting machines, felting), and ethical hacking (i.e., network sandbox)

24 **Title:** National Association for Stock Car Auto Racing Implementing Science, Technology, Engineering and Math
Organization: Everett High School
Strand: K-12 Education
Overview: Using STEM to explore the world of NASCAR (National Association for Stock Car Auto Racing)

25 **Title:** What Happens Under the Earth?
Organization: Community Action Parent-Child Development Center-Head Start
Strand: Early Education
Overview: Providing Head Start students with an opportunity to interact with their peers and adults in a variety of small and large group activities

26 **Title:** Belchertown Environment, Science and Technology
Organization: Belchertown High School
Strand: K-12 Education
Overview: BEST (Belchertown Environment, Science and Technology) is a continuation of the 2011 Toyota Tapestry grant Belchertown Biodiversity: Let's Get Outside

27a **Sponsor:** Siemens

27b **Sponsor:** MassINC

Booth Number in Exhibit Hall L Exhibit Located in Lobby ★ Biogen "Ignite the Power of STEM" Grant Recipient

EXHIBITS

28 **Title:** Regional Science Resource Center at UMass Medical School
Organization: UMass Medical School
Strand: K-12 Education
Overview: Helping teachers implement more inquiry-based, student-centered science in all classrooms by providing ongoing technical support, access to materials and equipment, space for scientific investigations, and professional development opportunities

29 **Title:** Healthy Ecosystems, Healthy Neighborhoods: A Garden-based Summer Curriculum for Middle School Youth
Organization: CitySprouts
Strand: Out-of-School Time
Overview: Ecosystem-focused summer learning opportunities for low-income students that draw connections between science and their own lives

30 **Title:** STEM + History = Engaging School Programs at the Tsongas Industrial History Center
Organization: Tsongas Industrial History Center at Lowell National Historical Park
Strand: K-12 Education; Out-of-School Time
Overview: Learning about the American Industrial Revolution through activities and tours of the sites where history—and science—happened

31 **Title:** Ready for Robotics: Exploring Robotics in Early Education
Organization: Tufts University, Department of Child Study and Human Development
Strand: Early Education; K-12 Education; Digital Education; Research and Practice
Overview: The KIWI (Kids Invent With Imagination) robotics construction kit for youth ages 4-7

32 **Sponsor:** Raytheon

33 **Sponsor:** UMass Donahue Institute

34a **Sponsor:** Education Development Center, Inc. (EDC)

34b **Sponsor:** Worcester State University

35 **Title:** Green Chemistry and Sustainable Science
Organization: Beyond Benign
Strand: K-12 Education; Higher Education
Overview: Learn about the tools and resources available to teachers and students for incorporating green chemistry principles into your lab and classroom

36 **Title:** Supporting High Quality STEM Practices through Professional Development and Parent Engagement
Organization: Berkshire County Head Start
Strand: Early Education
Overview: Using integrated STEM practices and inquiry to build on professional development and enhance learning and exploration for children, parents, and staff

37 **Sponsor:** UMass Dartmouth

38 **Title:** STEM Activities for Toddlers through Bubble Play/Experiment
Organization: HCS Head Start (Holyoke, Chicopee, Springfield)
Strand: Early Education
Overview: Toddlers explore science through bubble play that uses baking soda and vinegar to make ordinary soap bubbles stay afloat

39a **Sponsor:** Mount Wachusett Community College

39b **Sponsor:** The Virtual High School

40 **Title:** Club Invention and Invention Project: Innovative STEM enrichment for Grades 1-8
Organization: Invent Now, Inc.
Strand: Out-of-School Time; Innovation/Entrepreneurship
Overview: Club Invention (and the all-new Invention Project for older students) is an elementary STEM enrichment program that inspires children to be confident in their natural ability to dream and create

41 **Title:** NuVu: Innovation School for Middle and High School Students
Organization: NuVu Studio
Strand: K-12 Education; Digital Education; Innovation/Entrepreneurship
Overview: Interactive costumes and wearable technology using microcontrollers, LEDs, fiber optics, sensors, and motors

42 **Title:** Seeding the Future: Growing the Next Generation of STEM Innovators through 21st Century Agriculture
Organization: Boston College
Strand: K-12 Education; Out-of-School Time; Innovation/Entrepreneurship; Career Awareness/Workforce Development
Overview: Applying hydroponics and aquaponics to the science of growing food

43 **Title:** Preschool Technology Connections: Using FaceTime/Skype to Build Relationships
Organization: Worcester Child Development Head Start
Strand: Early Education
Overview: Using FaceTime/Skype to build relationships

Booth Number in Exhibit Hall L Exhibit Located in Lobby ★ Biogen "Ignite the Power of STEM" Grant Recipient

EXHIBITS

44 **Title:** Heavy Lifting: Children's Learning with Simple Machines
Organization: Greater Lawrence Community Action Council, Inc. Head Start
Strand: Early Education
Overview: STEM Labs at 3 Head Start Centers with an interactive smart board, iPads and tablets for the children to explore and learn

45 **Title:** Taking STEM Outside: Field-Based Learning Experiences that Engage PreK-12 Students and Teachers
Organization: Mass Audubon
Strand: Early Education; K-12 Education, Out-of-School Time
Overview: Mass Audubon's field-based school and group programs and professional development for teachers provide "real world" examples of K-12 field-based learning experiences in a variety of habitats across Massachusetts

46 **Title:** Engineering is Elementary®: Twenty Units of Engineering Curriculum for Grades 1-5, Museum of Science
Organization: The Museum of Science, Boston
Strand: K-12 Education
Overview: Fun, engaging engineering challenges boost student interest in engineering

47a **Sponsor:** Museum of Science

47b **Sponsor:** Comcast

48 **Title:** NSF Program Resource Centers @ Education Development Center, Inc. (EDC)
Organization: Education Development Center, Inc.
Strand: K-12 Education; Digital Education; Out-of-School Time; Career Awareness/Workforce Development; Research and Practice
Overview: Explore EDC's three National Science Foundation program resource centers

49 **Sponsor:** iRobot

50 **Title:** Engineers Without Borders
Organization: University of Massachusetts, Amherst
Strand: Higher Education
Overview: Helping local and international communities create sustainable, community-driven solutions in order to improve their quality of life

51 **Sponsor:** The Christa Corrigan McAuliffe Center

52 **Title:** Engineeryourfuture.org: Boston Society of Civil Engineers K-12 Outreach
Organization: Boston Society of Civil Engineers
Strand: K-12 Education; Out-of-School Time; Career Awareness/Workforce Development
Overview: Bringing meaning to STEM subjects through bridge building contests, Thinkfest, Construction Career Days, Boston Bridge Tours and more

53 **Title:** Forensic Science as a Gateway to Career Interest in Applied Science and Technology Fields
Organization: Nipmuc Regional High School
Strand: K-12 Education; Career Awareness/Workforce Development
Overview: Nipmuc High School's Forensic Science Course as a gateway for students to learn about applied science and technology

54 **Title:** Through My Window: Innovative Engineering Education for Children and Young Teens in their Native Digital Environment
Organization: Springfield Technical Community College
Strand: Digital Education
Overview: Innovative engineering education for children and young teens in their native digital environment

55a **Sponsor:** General Dynamics

55b **Sponsor:** Mitre

56a **Sponsor:** Massachusetts Department of Early Education and Care

56b **Sponsor:** University of Massachusetts Medical School

57 **Title:** VEX IQ Challenge & VEX Robotics Competition
Organization: Robotics Education & Competition Foundation
Strand: K-12 Education; Out-of-School Time
Overview: Engaging students in hands-on sustainable and affordable curriculum-based robotics engineering programs across the U.S. and internationally

58 **Title:** Blended Model for Museum STEM Education
Organization: Berkshire Museum
Strand: Early Education; K-12 Education; Out-of-School Time; Digital Education
Overview: Cutting edge mobile technology, digital delivery systems, blended pedagogies

Booth Number in Exhibit Hall L Exhibit Located in Lobby ★ Biogen "Ignite the Power of STEM" Grant Recipient

EXHIBITS

59 ★
Title: Advanced Placement Physics Plus Robotics and Automation Engineering Pathway at Brighton High, Boston Public Schools
Organization: Brighton High School, Boston Public Schools
Strand: K-12 Education; Out-of-School Time; Digital Education; Innovation/Entrepreneurship; Career Awareness/Workforce Development
Overview: Encouraging inner-city students to enter the fields of Science, Engineering, and Mathematics

60 ★
Title: Hosting a School Wide STEAM Day - Igniting Student's Interests and Building a STEAM Supportive Community
Organization: King Philip Middle School
Strand: K-12 Education
Overview: School-wide STEAM-Day activities

61 ★
Title: Sustainable Fuller: Building a STEAM Program One Project at a Time at Fuller Middle School
Organization: Framingham Public Schools/Fuller Middle School
Strand: K-12 Education
Overview: Transforming into a STEAM school through professional development in project-based learning and design thinking

62 ★
Title: Building STEM from the Ground UP - STEM9 to STEMinar
Organization: Falmouth Public Schools - Falmouth High School
Strand: K-12 Education
Overview: STEM program that bridges the gap across various levels of high school students

63 **Sponsor:** Biogen Idec

64a **Sponsor:** Middlesex Community College

64b **Sponsor:** Mass Tech Collaborative

65a **Sponsor:** Bridgewater State University

65b **Sponsor:** Bay Path University

66a **Sponsor:** TERC

L **Sponsor:** EMC

L **Sponsor:** Massachusetts Life Sciences Center

L **Sponsor:** National Grid

L **Sponsor:** Destination Worcester

L **Sponsor:** Massachusetts Department of Higher Education/STEM Pipeline Fund

L **Sponsor:** Microsoft

L **Sponsor:** UMass Boston/BATEC

Be sure to also visit Boston University's mobile "CityLab" parked just outside DCU's main entrance.

Booth Number in Exhibit Hall **L** Exhibit Located in Lobby ★ Biogen "Ignite the Power of STEM" Grant Recipient

OFFICE OF THE GOVERNOR
COMMONWEALTH OF MASSACHUSETTS
STATE HOUSE ● BOSTON, MA 02133
(617) 725-4000

DEVAL L. PATRICK
GOVERNOR

October 22, 2014

Dear Friends:

On behalf of the Commonwealth of Massachusetts, welcome to the 11th Annual STEM Summit at the DCU Center in Worcester.

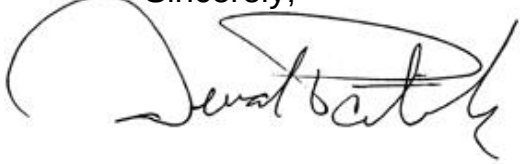
During my time as your Governor, it has been an honor to join you at multiple Summits. I want to thank Congressman Kennedy and Dr. Leiden for leading the STEM Council, as well as the educators, legislators, business and community representatives who are present today. I applaud your commitment to empower our students, teachers, and employees as they evolve and adapt to meet the ever-changing needs of our economy.

STEM education and workforce development are the foundation of the Commonwealth's thriving innovation economy. Using that mindset, I am proud of our joint efforts and all we have accomplished to move forward in these critical fields. We have invested resources to support increased collaboration between educational institutions and the workforce, which will continue to create opportunities for growth.

Together we have made progress on the goals of the STEM Plan *"Expanding the Pipeline for All: Massachusetts' Plan for Excellence in STEM Education"*, supported the replication of effective programs, created awareness on the importance of STEM and created a governance model and infrastructure for the road ahead.

I am confident that with your continued engagement more progress will be made on the Commonwealth's STEM initiatives. Please accept my best wishes for a successful and informative Summit.

Sincerely,



The Massachusetts STEM Advisory Council

One Ashburton Place, Rm. 1401
Boston, MA 02108

Honorary Co-Chair: Congressman Joe Kennedy
Co-Chair: Jeff Leiden, M.D., Ph.D.

Dear Members of the STEM Community,

On behalf of the Massachusetts STEM Advisory Council, we would like to welcome you to the 11th annual STEM Summit. The STEM Summit provides an opportunity for the entire community to share best practices and inform each other about successful programs and partnerships that are occurring across the Commonwealth. We hope that you find this to be a valuable day to connect with each other, learn something new and find inspiration.
We would also like to take this opportunity to highlight all of the tremendous work that the STEM Council did this year. One of the Council's highest priorities in 2014 was the codification of the Council in order to retain its authority, no matter who occupies the Governor's Office. This ensures continuity of policy, programming, and direction during times of change, which is critical to our ongoing success across the Commonwealth. We successfully championed legislation to codify the Council, which the Governor formally signed into law this summer. The codification also provides an opportunity for the Council to be restructured and to include an increased diversity of perspectives.

Our second priority has been to determine the best strategy for strengthening the Council's relationship with the business community and creating an exemplary private-public partnership around STEM. We have the opportunity to bring together business leaders to create deeper relationships between industry and education in order to expand our STEM Pipeline across the Commonwealth.

Our third priority was to broaden the Council's reach beyond its membership, which was the motivation behind the launch of our new STEM Council Lecture Series. From an expert discussion on the skills gap to a documentary screening at the Museum of Science: These events have provided an opportunity for our community to discuss STEM-related topics in depth and reach a broad audience.

Lastly, we would like to thank Governor Patrick for his tremendous support and advocacy for STEM throughout his administration. Under Governor Patrick, the STEM Council was created through an Executive Order and sustained through legislation. Additionally, the state's first STEM Plan was written in 2010 and updated in 2013. Our students are better prepared and more interested in STEM than ever before because of Governor Patrick's leadership—one of the many marks he will leave on Massachusetts for years to come.

Thank you for your commitment to STEM, and we hope that you enjoy the day.

Sincerely,

Congressman Joe Kennedy
Honorary Co-Chair, STEM Advisory Council

Dr. Jeff Leiden, Chairman, President and CEO of Vertex
Co-Chair, STEM Advisory Council

MBR
MASSACHUSETTS BUSINESS ROUNDTABLE

October 22, 2014

Dear Members of the STEM Community:

As we gather again to celebrate the success of the state STEM initiative and look ahead to its future, we continue to be motivated by the same cause: ensuring the Massachusetts workforce has the skills necessary to compete. Time and time again, Massachusetts employers identify STEM competencies as essential, yet in a recent survey, 69% said they were having difficulty finding workers with the necessary skills.

The state's nationally recognized STEM initiative is tackling that issue head on. The STEM Advisory Council, chaired by the dynamic team of Congressman Joe Kennedy and Vertex CEO Dr. Jeff Leiden, is making progress through the tremendous on-the-ground efforts of the Regional Networks and the tireless efforts of the STEM advocates participating in today's Summit. From the STEM Preschool at the Heritage Museum and Gardens in Sandwich, to the STEM Starter Academy at the state's Community Colleges, there is a coordinated effort through the state's education continuum to ensure the workforce pipeline is preparing students for today's economy.

Promoting STEM education is a statewide economic development strategy. Every corner of the Commonwealth – from its great Gateway Cities like our host city of Worcester, to more rural areas, to Boston – has industries seeking workers skilled in science, technology, engineering and math. Until every child in every corner of the Commonwealth is exposed to and inspired by STEM subjects, and until every worker has the opportunity to get the skills they need, our work is not done. But because of the outstanding work of the STEM community, we are making steady and impactful progress. For those in attendance at today's Summit, who have been integral to those efforts, the Massachusetts Business Roundtable thanks you.

Enjoy the day, celebrate the progress, remain mindful of the challenges ahead and most importantly, let's keep pushing our agenda forward. Thank you for your leadership and partnership in this movement.

Sincerely,

Michael P. Hogan
President & Chief Executive Officer
A.D. Makepeace Company
Chair

JD Chesloff
Executive Director

University of Massachusetts
UMASS Amherst • Boston • Dartmouth • Lowell • Worcester • UMassOnline

Robert L. Caret
President

October 22, 2014

Dear STEM Colleagues,

On behalf of the University of Massachusetts, its five campuses, and the UMass Donahue Institute, I am thrilled to welcome you to what promises to be another exciting STEM Summit. Massachusetts continues to be a leader in the national STEM movement, and the content of this year's conference certainly confirms that status. Today's plenary program includes a lineup of prominent leaders and innovators, including an internationally recognized 15-year-old student scientist from Boston, and Worcester's own National High School Principal of the Year. With a broad array of rich panel sessions and dynamic resource exhibits from across Massachusetts, this 11th annual Summit showcases the tremendous talent, creativity, passion and commitment you all invest daily in the youth, workforce, and economic vitality of the Commonwealth.

A well-educated STEM workforce and a STEM-literate citizenry are critical to a thriving 21st century economy. Collaboration and alignment of purpose among the business, education, government, and non-profit communities are key to achieving our goals as a Commonwealth. Beginning with early education and K-12, and carrying through to higher education, workforce development, and into the workplace and lifelong learning settings, here in Massachusetts we should be proud of our unified commitment and our results.

The University of Massachusetts has been and will always be a dedicated partner and leader in the STEM community. We take pride in our rich STEM educational offerings at the undergraduate and postgraduate levels, cutting edge research programs throughout the STEM disciplines, outreach activities across the Commonwealth, and fruitful partnerships and collaborations we enjoy with so many of the organizations represented here today.

I thank the Governor's STEM Advisory Council, the Mass Business Roundtable, and the UMass Donahue Institute for the tremendous effort they have once again invested in sustaining and growing this important event; the myriad sponsors who make this event possible; and all of the stakeholders who have come from across the Commonwealth to share ideas and celebrate success.

My best wishes to you all for a rewarding 2014 STEM Summit.

Sincerely,

Robert L. Caret, Ph.D.
President

225 Franklin Street | 33rd Floor | Boston, MA 02110 | P: (617) 287–7050 | F: (617) 287–7167 | www.massachusetts.edu

biogen idec
FOUNDATION

Dear STEM Summit Participants,

Thank you for your role in shaping tomorrow's STEM leaders! The excitement, curiosity and wonder you convey to the students in your classrooms are the keys to capturing their interest and propelling them towards a STEM-related career.

In your school or classroom could be a future researcher, technical engineer or even a Nobel Prize winner. We have collective responsibility to provide a variety of STEM pathways for students of all abilities, and to provide resources and support for STEM educators.

The Biogen Idec Foundation and the Biogen Idec Community Lab continue to focus on supporting programs that enhance high-quality STEM education for present and future generations. The Biogen Idec Community Lab is the longest running corporate hands-on science lab in the nation where over 22,000 students in Greater Boston have experienced laboratory science over the last 12 years. Community Lab science expertise, coupled with the Foundation's grant program, has led to tremendous partnerships with the Museum of Science, Teach for America, Cambridge Science Festival, Citizen Schools and other local STEM initiatives over the years.

The Biogen Idec Foundation is excited to expand its ***Ignite the Power of STEM*** Grant Program and provide $80,000 to support innovative science education programs and projects in elementary, middle and high schools represented at this year's Summit. Details regarding this exciting grant program are available at today's event and on the MA STEM Summit's website.

I commend the Summit co-hosts, the Massachusetts Governor's STEM Advisory Council, the Massachusetts Business Roundtable and the University of Massachusetts Donahue Institute for continued leadership in strengthening the state's STEM pipeline and encouraging youth to experience the exciting opportunities an education in STEM can provide.

We appreciate the opportunity to participate in this important meeting and value our continued partnership. I'm confident that the collaboration with your fellow STEM education colleagues here today will spark ideas, discussions and new initiatives that will enhance innovative science programming for students across Massachusetts.

We look forward to supporting your efforts to educate and inspire the next generation of scientists and STEM leaders.

Sincerely,

Tony Kingsley, Chairman, Biogen Idec Foundation

Boston University Office of the Provost

Professor Jean Morrison, University Provost and Chief Academic Officer

One Silber Way
Boston, Massachusetts 02215
T 617-353-2230 F 617-353-6580
www.bu.edu/provost

October 22, 2014

Greetings to all STEM Summit participants:

Boston University is proud to sponsor this year's STEM Summit, an event that promotes the value of the STEM disciplines to our societal, scholarly and economic development. In 2012, BU joined the Association of American Universities (AAU), an elite organization of leading higher education research institutions. Boston University's AAU membership recognizes BU's emergence as a top private research university and leader in higher education.

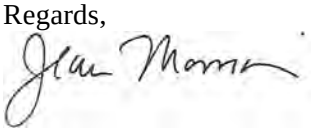
As an active member of the AAU's STEM Initiative, BU is committed to playing a leading role in STEM research, as well as advancing STEM education. In 2013, BU established the Office of STEM Education Initiatives, a University-wide effort to develop a broad, coherent strategy for improving STEM education. BU's STEM Education Initiatives seek to promote diversity in the STEM disciplines, new course transformation models, innovation in teacher preparation, and to prepare the next generation of STEM leaders through a curriculum aligned with industry and societal needs. STEM Education Initiatives programming include:

- **CityLab:** In 1992, Boston University pioneered an innovative, science education outreach program that has been replicated in several locations across the country. A collaboration of the Schools of Medicine and Education, CityLab provides access to biotechnology laboratory and curriculum unavailable to most school systems for students and teachers grades 7-12. In addition, a 40-foot MobileLab brings the CityLab experience directly to students at their schools.
- **Inspiration Ambassadors:** BU's undergraduate Inspiration Ambassadors from the College of Engineering visit elementary, middle, and high schools in Greater Boston to give interactive, fun presentations to students, showing that engineering is essential to our health, happiness, and safety.
- **PhysTEC (Physics Teacher Education Coalition):** This new teacher training program has been developed in collaboration with BU's core science departments and the School of Education. The BU Physics Teacher Network, a group of more than 50 active high school physics teachers in the Boston area, is an extension of PhysTEC. Members of this coalition are developing a new MOOC for AP Physics, due to debut on edX in February 2015, which will provide access to advanced courses for schools with insufficient resources.
- **STEM Educator-Engineer Program (STEEP):** This five-year program was designed to help meet the nation's need for educators with the skills and passion for both engineering and education to sustain our competitive advantage. By combining a Master of Arts in Teaching degree with a Bachelor of Science degree in Engineering, STEEP graduates are prepared to teach science, technology, engineering or math (STEM) in middle schools and high schools.

Please stop by BU's information table to learn more about BU's work in STEM education.

Boston University is thrilled to sponsor this year's STEM Summit. We look forward to the opportunity to promote BU's STEM education initiatives and to connect with our STEM colleagues.

Regards,



Jean Morrison
University Provost and Chief Academic Officer

355 Main St, 5th Floor
Cambridge, MA 02142

September 20, 2014

To the Massachusetts STEM Community,

On behalf of Google Cambridge, we are delighted to be a lead sponsor of the 2014 STEM Summit. This event provides a unique opportunity for business, education and nonprofit leadership to come together to provide a path forward for our children to succeed in the new economy.

Google's office in Cambridge provides the engineering to power many of Google's core products including Android, YouTube, Travel and Google Play. With over 800 employees in our newly expanded Kendall Square office, we are thankful to be a part of the excellent innovation community that thrives in Massachusetts.

Over the last several years, Google has focused specifically on bringing computer science education to a wider group of young people. Women only represent 18% of people majoring in computer science at the university level, down from a peak of 37% in the 1980s and the statistics for African Americans and Latinos are even lower. Computer science is a creative medium and we know we are not at our best if we are missing the perspective of a significant proportion of our population in this growing sector of the economy.

Partnering with other companies, we were proud to have helped create MassCAN, a public private partnership dedicated to bringing computer science education to every young person in the Bay State. With the support of Governor Patrick, Speaker DeLeo, and rest of the Massachusetts Legislature, we have secured funding to get the MassCAN initiative off the ground with resources from state and matched by the private sector. The coalition that has come together to support this initiative has been truly inspiring.

We are delighted to be a part of this summit and look forward to seeing how these conversations can allow us to continue to be a state of innovation.

Sincerely,

Steve Vinter

Director of Engineering
Google Cambridge

Empowering Opportunity. Look Inside.™

For over a decade, Intel has been actively involved in STEM education in Massachusetts. Today, we're all using technology more than ever before. But relatively few students, especially girls, are choosing to study the STEM subjects critical to tomorrow's careers.

Intel is working to close this gap through a collection of programs and partnerships to inspire today's students to become innovators and creators of the next generation of technology.

www.intel.com/forward
Follow us @Intelinvolved

intel® Look Inside.™

October 22, 2014

Dear STEM Stakeholders:

Welcome to the 2014 Massachusetts STEM Summit. iRobot is honored to participate in such an exciting event. As we come together, we empower each other and our students to have greater success in the Science, Technology, Engineering and Math (STEM) fields. Our combined efforts will help the Commonwealth lead the way to a stronger workforce.

iRobot strives to provide resources for students, parents and educators to share in our passion for robotics. We visit classrooms, robotics teams, Scouting groups and others, showing the reality of robotics. We bring students to iRobot to see our history, interact with robots and experience life at a robotics engineering firm. iRobot is the founder and lead organizer of National Robotics Week, showcasing robotics around the country and bringing the industry to students in all 50 states. Most importantly, these efforts provide mentors, role models and a view into the world of engineering for young students. Students need to see, touch and experience STEM fields to grasp the wonder and opportunity of which they can be a part.

To be truly successful, we need to bring STEM alive in all our classrooms. All students need exposure to the STEM topics, integrated with their daily classroom activities. Engineering, in practice, includes writing, speaking, understanding cultural differences, as well as math, science and technology. Our challenge is to engage each and every student, not just those who “opt-in” with electives, after school or club activities. We need to reimagine education so that the student who enjoys writing learns about technical writing, the student who doodles sees opportunity as a graphic or industrial designer, and we continue to inspire our computer, math and science kids to enter, and remain, in STEM fields.

Your presence here shows your commitment to STEM, and we thank you. Bring your educational group to iRobot, or invite us to visit your group. Robots capture the imagination of our students and set them on a course to innovate, build cool stuff and join us in changing the world.

Sincerely,

Colin Angle
Chairman, CEO and Co-Founder of iRobot

iRobot Corporation
8 Crosby Drive, Bedford, MA 01730-1402 • 781.430.3000 • Fax 781.430.3001 • www.irobot.com

MASSACHUSETTS
LIFE SCIENCES CENTER

Investing in the State of Innovation

October 22, 2014

Dear STEM Stakeholders:

The Massachusetts Life Sciences Center (MLSC) is very pleased to once again support the Massachusetts STEM Summit. We also are proud to be represented on the Governor's STEM Council, the goal of which is to ensure that all students in the Commonwealth receive a strong education that prepares them for jobs in the innovation economy.

Massachusetts has established its undisputed global leadership in the life sciences. Our state has become "the place to be" for companies in industry sectors such as biotech, pharmaceuticals and medical technology. The state's hallmark is our talented workforce. To meet the demands of the rapidly growing number of life sciences companies here in Massachusetts our workforce must keep pace -- in size and in skill levels. This means that students and future workers across the state must have the education and training they need to compete for and be successful in STEM-related careers. We are grateful to the Patrick Administration for their leadership in meeting this challenge by investing in STEM education and training programs in Massachusetts.

The MLSC recognizes that there are different levels of skill and expertise needed by the state's life sciences industry sectors, ranging from research to biomanufacturing. And we are committed to doing our part to promote access across the state to the institutions and programs that are providing STEM education and training – from K-12, to vocational-technical schools, to our community colleges, to our world-class universities, to community-based workforce development programs.

Collectively, we must engage students in STEM subjects and we must enable our teachers and schools to provide top notch STEM training. In this spirit, the **MLSC has invested over $45 million since 2008 in programs and projects that support STEM education.**

To support students' early interest in STEM, the MLSC has awarded 19 discretionary grants totaling nearly $800,000 over the past four years. These grants build upon the Patrick Administration's strategy for enhancing STEM educational opportunities across Massachusetts. Grants have been provided to organizations offering innovative programs, such as The DIGITS Project, Citizens Schools, the Girl Scouts, Science Club for Girls, Freedom House, MassTLC, Youth CITIES, Girls Inc., and the Boston Children's Museum. These programs broaden young people's skills, while enhancing their knowledge of career opportunities in the life sciences and providing professional development for their teachers. Importantly, these programs also target girls and racial and ethnic minorities, who are under-represented among students interested in pursuing STEM-related careers.

The MLSC also has established a STEM Equipment and Supplies Grant Program, which has awarded 60 grants totaling nearly $8.4 million to vocational technical high schools, public high schools in gateway cities, public high schools with low-income student populations, and workforce training organizations that serve eligible high schools. The 2014 round of the program will also make awards to middle schools.

For higher education, the MLSC has awarded capital grants totaling over $36 million to community colleges and 4-year colleges and universities to enable the purchase of equipment and the construction/renovation of laboratory space.

For our college students and recent graduates, the MLSC runs the Internship Challenge, a year-round workforce development program that strengthens the talent pipeline for our state's life sciences industry by creating hundreds of internships each year that offer students a hands-on learning experience. To date, the MLSC has funded more than 1,800 paid internships at over 420 life sciences companies across Massachusetts!

I hope and expect that this year's STEM Summit will further mobilize our STEM community to solidify Massachusetts' place as a leader in STEM. We look forward to participating in the Summit and collaborating with you to make these goals a reality.

Sincerely,

SRWindhamBannister

Susan R. Windham-Bannister, Ph.D.
President & CEO

1000 Winter Street
Suite 2900
South Entrance
Waltham, MA 02451

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F : 781.622.1530

masslifesciences.com

Microsoft

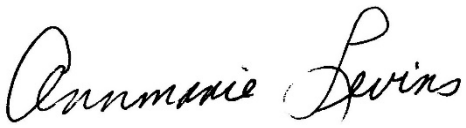
Welcome to the Massachusetts STEM Summit!

Massachusetts has a long history as a major tech hub in the United States. Technology is undoubtedly a staple of the Massachusetts economy, providing thousands of jobs, many of which remain unfilled due to a lack of qualified candidates. Yet, throughout the U.S., across a wide range of industries, there is a talent crisis for workers trained in the STEM fields. Already in a shortage, the gap is projected to widen as the number of graduates in computer science are not keeping pace with projected job growth in the field.

Microsoft is committed to facilitating public-private partnerships designed to increase educational opportunities and achievement through our support of initiatives that strengthen K-12 STEM education. We are proud supporters of the MassTLC Education Foundation, working to drive the systemic change we need to ensure our students are prepared for 21st century jobs. Additionally, Microsoft is supporting its employees in making individual contributions through a program called TEALS: Technology Education and Literacy in Schools. This program, in practice today in Boston, pairs Microsoft employee volunteers and high school teachers to teach "Intro to Computer Science" and "AP Computer Science" courses. We are also proud to be part of MassCAN, the Massachusetts Computer Science Attainment Network.

Together we are making progress. More students are becoming interested in STEM. More teachers are learning cutting edge technologies. Schools are partnering with industry. But it's just the start. We look forward to partnering with you to strengthen the STEM pipeline in Massachusetts, to close the skills gap and meet projected domestic workforce needs.

Sincerely,



Annmarie Levins
General Manager
Technology & Civic Engagement

Marcy L. Reed
President, Massachusetts

October 22, 2014

Dear STEM Stakeholders,

As a member of the Governor's STEM Advisory Council, it is my privilege to welcome you to the 2014 Massachusetts STEM Summit. I join Governor Patrick, Congressman Kennedy, my fellow Council members and all of you here today to participate in the critical discussion of making sure we advance Science, Technology, Engineering and Math skills for the children of Massachusetts and across the country.

National Grid is dedicated to inspiring, attracting, and developing a skilled workforce which begins with our support of Early Education programs all the way through high school and beyond. As we welcome you here today to Worcester, the largest of the state's 26 Gateway Cities, I am particularly pleased to share with you our investment with organizations serving the Worcester community.

Proud examples include:

EcoTarium: Supporting the development of City Science, the museum's new exhibit set to explore how urban environments function and the science they encounter as a result.

Girls Incorporated: Providing girls with high quality STEM training and support throughout the school year and summer months.

FIRST Robotics: Sponsorship of Central MA district event at Worcester Polytechnic Institute.

Worcester Technical High School: Supporting the school's team participation in the VEX Robotics World Championship competition in Anaheim, California.

Bottom Line: Assisting students through college application process and mentoring through college graduation.

Energy Utility Program: Partnership with **Quinsigamond Community College** where students earn college credit and EUT certificate as they prepare for a job in the energy industry. For more information, visit www.qcc.edu/academics/engineering-technology/energy-utility-technology.

I also invite you to visit our **Sustainability Hub** located on 912 Main Street. New England's first-of-its kind **Sustainability Hub** provides hands-on education about energy efficiency and emerging energy technologies for National Grid's customers and the community at large. The 2,200 square foot space was donated by **Clark University** and is an integral part of National Grid's Smart Energy Solutions Program, the largest and most comprehensive smart grid program in Massachusetts. Local university ambassadors from **Clark University** and **Worcester Polytechnic Institute** help staff the **Hub**, creating cooperative learning opportunities for both local customers and students.

The energy industry needs to inspire a new generation of engineers and other STEM professionals and National Grid is taking a leadership role to ensure our country's future success. Thank you for joining us here today and we look forward to continuing the discussion to further advance our future workforce.

Sincerely,

40 Sylvan Road, Waltham, MA 02451
www.nationalgridus.com

Raytheon

Thomas A. Kennedy
Chairman & CEO

Raytheon Company
870 Winter Street
Waltham, Massachusetts
02451 USA

October 22, 2014

Dear STEM Stakeholders,

Raytheon is proud to support the 2014 Massachusetts STEM Summit. As an original sponsor, we look forward to joining this annual gathering of leaders and organizations partnering to strengthen the Commonwealth's position in science, technology, engineering and mathematics education.

The future success of Massachusetts and our nation depends on encouraging young people to be our next generation of scientists and engineers, and inspiring tomorrow's innovators is an opportunity Raytheon strongly embraces.

As a company of engineers, we are committed to helping address the STEM challenge through our many MathMovesU® initiatives and partnerships. As such, Raytheon is involved in every stage of STEM education from elementary up through higher education with a wide range of programs that provide students with hands-on learning, teachers with support for professional development, and parents with information resources.

Our efforts have more of an impact when we collaborate and share ideas. So I want to thank the Summit's co-hosts, the Governor's STEM Advisory Council, the Massachusetts Business Roundtable and the University of Massachusetts Donahue Institute, for promoting this truly collaborative effort to advance STEM education.

Together, we can further strengthen our network of stakeholders committed to developing innovative and effective approaches to STEM teaching and learning throughout the Commonwealth.

Sincerely,

UMASS BOSTON
UNIVERSITY OF MASSACHUSETTS BOSTON
50 Years

100 Morrissey Boulevard
Boston, MA 02125-3393
P: 617.287.5000
www.umb.edu

October 22, 2014
Dear STEM Colleagues:

The University of Massachusetts Boston and its partner units – Broadening Advanced Technological Education Connections (BATEC), the College of Science and Mathematics (CSM), and Enrollment Management – are pleased to support the 2014 Massachusetts STEM Summit statewide collaboration. The summit is a critical convening opportunity for those of us who work together to create a strong STEM education and workforce system for our state.

Headquartered at the University of Massachusetts Boston, BATEC is the National Center of Excellence for Computing and Information Technologies within the National Science Foundation's Advanced Technological Education program. BATEC has a history of success helping to improve computing and information technology programs. It works throughout the state and nationally to define, extend, and strengthen computing and information technology pathways and career opportunities for urban students. BATEC's data-driven research initiative provides for better understanding and profiling of these middle-career skill pathways.

BATEC facilitates meaningful collaboration between educators and industry in building innovative degree programs in emerging technologies that provide stackable credentials while encouraging student advancement. Industry Forums introduce educators and students to relevant information technologies and services that drive our local economy. Summer Institutes support academic faculty in their efforts to learn and develop curricula that integrate skills standards and problem-based methodologies. Workforce Education Summits convene Thought Leaders from business, education, government, and the community to explore critical research-based trends and opportunities.

Program offerings such as Dual Enrollment and Summer Bridge provide high school students the chance to experience college classes and receive course credit. The Tech Apprentice Program (for high school) and the Technology Internship Program (for community college) afford motivated students workforce experience. Tech Bay and the Tech Know How Lab are student-led initiatives that reinforce technical skills while developing professional skills in a workplace-oriented environment.

We are pleased this year to be joined by our College of Science and Mathematics (CSM), the fastest- growing college at UMass Boston. CSM, through its highly innovative student success communities— and with support from Sanofi/ Genzyme, Oracle, and Dana-Farber/Harvard Cancer Center—supports UMass Boston's highly diverse student body as it gains the education and research experience it needs to compete in the innovation economy of Massachusetts.

UMass Boston, celebrating its 50th Anniversary, wishes to thank the Governor's STEM Advisory Council, the UMass Donahue Institute, and the other supporters of this event for their leadership in the quest to make Massachusetts a world-class STEM leader.

Sincerely,

Deborah Boisvert
Director, BATEC
www.batec.org

Andrew Grosovsky
Dean, College of Science and Mathematics
www.umb.edu/academics/csm

UMass | Dartmouth

OFFICE OF THE PROVOST

Mohammad A. Karim, Ph.D.
Provost and Executive Vice Chancellor
for Academic and Student Affairs,
Chief Operating Officer

September 25, 2014

Welcome to all STEM Summit participants:

The University of Massachusetts Dartmouth embraces our role in preparing a new generation of leaders highly prepared in the growing STEM fields. UMass Dartmouth distinguishes itself as a vibrant, public research university dedicated to engaged learning and innovative research resulting in personal and lifelong student success. The support and expansion of STEM education and development is at the core of our commitment to our students.

We will continue to build upon our record of supporting an integrated curriculum, building partnerships, and providing our undergraduate and graduate students with the tools necessary to excel in the innovation economy.

Our STEM Education and Teacher Development Department is committed to providing teacher preparation, licensing, and professional development opportunities for aspiring candidates and teachers who are already working in schools. We are committed to the alignment of educators with the current and emerging needs of the region in the context of increased demand for curriculum rigor in STEM and improvement in pre-service and in-service teacher preparation.

The Kaput Center, established in the spirit and vision of innovative thinker James Kaput, supports sustained investigation of foundational issues in mathematics education. The Center is a place where fundamental problems in mathematics education are studied, discussed and analyzed through conferences, colloquium series, basic research and development, commissioned reports, and think-tank meetings.

We are excited to be a part of this STEM Summit and partner with our fellow participants in expanding the Commonwealth's STEM leadership position.

Sincerely,

Mohammad Karim
Provost and Executive Vice Chancellor for Academic and Student Affairs,
Chief Operating Officer

Office of the Provost ▪ www.umassd.edu
University of Massachusetts Dartmouth ▪ 285 Old Westport Road ▪ North Dartmouth ▪ MA 02747-2300
Ph: 508.999.8024 ▪ Fax: 508.999.8375

Donna C. Cupelo
Region President
New England

October 22, 2014

Dear STEM Stakeholders,

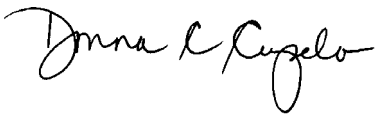
The 2014 Massachusetts STEM Summit provides a great opportunity for educators, business leaders, nonprofit partners, and public officials to engage in an important discussion about strengthening Science, Technology, Engineering, and Math (STEM) to benefit students in Massachusetts.

Together, we are ensuring that Massachusetts is providing students with the strong STEM foundation needed to succeed in higher education, and ultimately, careers that are driving our local and global economies. We are fortunate to have Governor Deval Patrick's and U.S. Representative Joseph Kennedy's leadership on this effort. Their dedication to ensuring all Massachusetts students are achieving in STEM, has resulted in our state being a global education leader.

At Verizon, we believe that investing in STEM education is critical to the prosperity of our communities. We leverage our resources, both technical and financial, to support programs that provide professional development for teachers and prepare students for STEM success. We recently increased our commitment to STEM by supporting President Barack Obama's ConnectED initiative to improve STEM education with a three year, $100 million commitment to STEM initiatives nationwide.

We are honored to work with such a dedicated group of leaders who are focused on ensuring that every student in Massachusetts is proficient in STEM. Together, we are building a new generation of leaders that are securing the future of our state and our nation through innovation.

Sincerely,



WGBH
One Guest Street
Boston
Massachusetts
02135

617 300 2000
wgbh.org

Dear Massachusetts STEM Summit Participants,

WGBH Boston is proud to be the media partner for the 2014 Massachusetts STEM Summit. We commend Governor Patrick and the Commonwealth for its extraordinary commitment to STEM education and for convening this summit 11 years in a row.

As one of the nation's leading producers of media-based resources to help teachers teach and students learn, WGBH has a long history of promoting STEM education in classrooms and living rooms across America. Many of our STEM productions are household names, from *Nova* to *Curious George*. WGBH regularly engages learners from Pre-K on with innovative, STEM-based television series, Web content, mobile apps, and community outreach initiatives.

Two years ago, WGBH partnered with PBS to launch PBS LearningMedia, our online service for educators that provides easy access to free, classroom-ready, curriculum-targeted digital resources. The new service grew out of WGBH's pioneering digital online library for educators, Teachers' Domain. Today, WGBH is taking the lead in creating PBS LearningMedia's crucial STEM content. The impact has been immediate: 1.5 million users in 48 states have signed on, fully one-third of all US educators.

Closer to home, we're the media partner for the State's early childhood and K-12 education agencies, helping create curriculum-targeted easy-to-access digital content, much of it STEM-focused, for two ambitious Race to the Top initiatives.

Massachusetts has been called Silicon Valley East, and with good reason. STEM drives our educational priorities and our robust high-tech economy, with impressive results. Even during the recent worldwide economic downturn, Massachusetts gained 19,200 jobs in IT and computer science, 10,400 jobs in biology and health professions, and 6,600 jobs in math and physical science-enabled professions. (Source: Massachusetts Plan for Excellence in STEM Education, November 2013).

WGBH salutes the State's Department of Education, the participants in today's summit, and educators statewide for making STEM education a priority. We are thrilled to join with you in making a real difference.

Jonathan C. Abbott
President and CEO

WORCESTER REGIONAL
Chamber of Commerce

Recruit | Retain | Incubate

October 22, 2014

Dear Summit Participants and Stakeholders:

Welcome to Worcester, Massachusetts! On behalf of Destination Worcester and the Worcester Regional Chamber of Commerce, we are thrilled to sponsor the 2014 Massachusetts STEM Summit. We appreciate the opportunity to join the discussion about strengthening STEM curriculum and the STEM skills of students in the Commonwealth.

Worcester is a center of commerce with varying industry sectors that make-up our diverse business community. Topping this list are health care, medical research, life sciences, biotechnology, manufacturing, and information technology. Many of these businesses depend on access to a workforce with a strong STEM education. The Worcester region is also home to 13 renowned colleges and universities—many with robust curriculums in STEM-related fields.

The Worcester Regional Chamber of Commerce is committed to a 'recruit, retain and incubate' strategy that focuses on building partnerships between the higher education and business communities and recruiting new businesses to the region. Both of these initiatives require access to an educated workforce that is proficient in STEM.

I would like to take this opportunity to thank Governor Deval Patrick, Congressman Joe Kennedy, III, Dr. Jeffrey Leiden and the STEM Council for their continued work. Thanks to their ongoing efforts and collaboration, Massachusetts is focused on developing a statewide STEM plan that will enhance the fields of science, technology, engineering and math to ensure the future success of the Commonwealth.

Sincerely,

Timothy P. Murray
President and CEO

446 Main St., Suite 200 • Worcester, MA 01608 • T: 508.753.2924 • F: 508.754.8560 • www.worcesterchamber.org

100 Institute Road
Worcester, MA 01609-2280 USA

October 22, 2014

Dear STEM Summit participants,

STEM policy, research and education have never been more critical to the success of the nation and the world than they are today. WPI is proud to sponsor this important conference alongside business and community leaders and to support the work of STEM professionals across the Commonwealth.

At WPI we believe that that the right way to teach the STEM disciplines is through an experiential approach that allows students to make an impact as they solve real problems, and for nearly 150 years we have educated scientists and engineers on the principle of theory and practice.

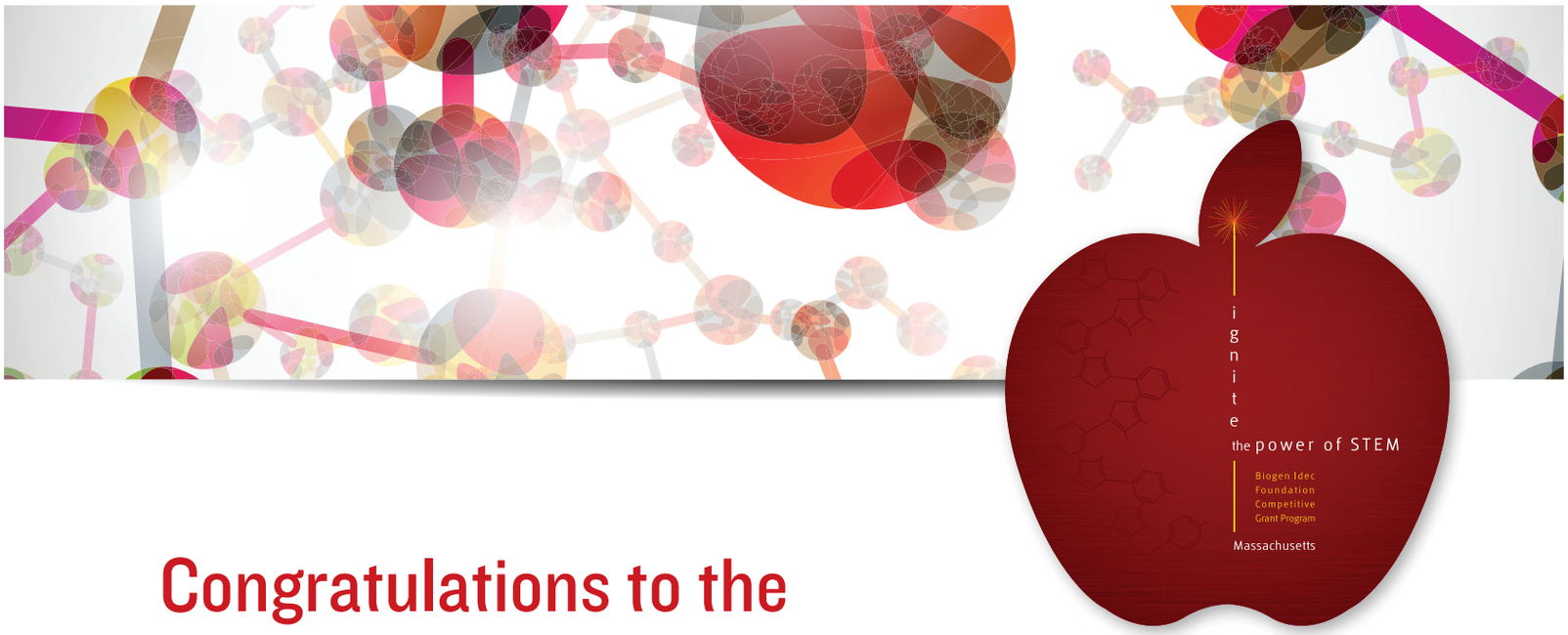
Our work in Robotics, for example spans all ages, from our close partnership with FIRST Robotics, focusing on building enthusiasm and interest at a young age, to our flagship undergraduate and graduate programs in Robotics Engineering, and our national success with the DARPA Robotics Challenge trials. Also, for the fourth consecutive year, WPI has been selected by NASA to host its Sample Return Robot (SRR) Challenge, a Centennial Challenge competition with a prize purse of $1.5 million. That competition will also be followed by the fourth annual TouchTomorrow Festival of Science, Technology and Robots which is comprised of hands-on exhibits and activities designed to be enjoyed by all ages.

And, in 2012, we launched the STEM Education Center at WPI, which seeks to advance licensure and degree programs, professional development, and research to address teaching and learning for the K-12 community.

WPI is once again pleased to continue our support of this important work and delighted to celebrate our joint accomplishments and set direction for the years ahead.

Sincerely,

Laurie Leshin
President, WPI



Congratulations to the recipients of the 2014 Ignite the Power of STEM Grant Program

Arlington High School
School Walls: A Permeable Membrane

Belchertown High School
Belchertown Environment, Science and Technology (BEST)

Brighton High School
Robotics and Automation Engineering Hexbot Program

Everett High School
NASCAR STEM

Falmouth High School
STEM Lab

Fuller Middle School
(Framingham)
Fuller Bioengineering for Sustainability Project

Hudson High School
Collecting Data on the Ecology of the Assabet River

King Philip Middle School
(Norfolk)
Student STEAM Workshop

Newton North High School
Seeds To STEM

Qualters Middle School
(Mansfield)
8th Grade STEM Careers Day

Thomas Hamilton Primary School
(Weymouth)
S.T.E.M. for T.H.E.M.
(The Hamilton Engineering Minds)

Wellesley Public Schools
Science and Technology Expo

Worcester Technical High School
Forces of Nature: A STEM Integrated Learning Experience for Urban Students

Now accepting applications for innovative STEM programs for your classrooms and schools!

Up to 40 grants will be awarded in 2015:

- $5,000 school grants
- $2,000 teacher grants

Interested in applying? Visit www.biogenidec.com/ignite to learn more.

biogen idec
FOUNDATION

MA Governor's STEM Advisory Council

@Scale Endorsed Projects

Phase I - Student Interest/Readiness

BioTeach is MassBioEd's signature multi-year science education program designed to bring cutting-edge biotechnology curriculum and experiences to more students, teachers, and schools across the state. Through a combination of grants for school labs, student career exploration experiences, and teacher training and mentorship, BioTeach is cultivating the scientific leaders of tomorrow. Contact Lance Hartford at: lance.hartford@massbio.org or 617-674-5131. www.massbioed.org.

DIGITS is a classroom program that pairs STEM professionals with sixth-grade classes throughout the state to increase students' interest in STEM subjects and careers. STEM volunteers meet and talk with students about their careers, lead students in interactive STEM-related exercises, and serve as role models. Contact Joyce Plotkin at: joyce@digits.us.com or (617) 694-7309. www.digits.us.com.

MASS MATH + SCIENCE INITIATIVE was created to drive a school culture of high expectations by dramatically increasing participation and performance in Advanced Placement courses, particularly among underserved populations, to prepare students for college and career success in science, technology, engineering, and mathematics (STEM). Contact Jeff Mahoney at jmahoney@massinsight.org or (617) 778-1507. www.massinsight.org/mmsi.

PROJECT LEAD THE WAY PLTW *Project Lead The Way's* world-class, activity-, project-, problem-based STEM curriculum and high-quality teacher professional development, combined with an engaged network of partners, help students develop the skills to succeed in our global economy. Contact: Terry Adams at tadams@wpi.edu or (508)831-5198. www.pltw.org

MASSASOIT SCIENCE TRANSFER Massasoit Community College's Science Transfer Initiative (STI) has a goal of increasing enrollment, retention, and diversity in science majors and careers by providing early undergraduate research, enhanced advising, exposure to science career paths, and access to financial aid to encourage students to enroll in a science major and persist to a degree. Contact Michael Bankson mbankson@ massasoit.mass.edu or (508) 588-9100 X2109 www.massasoit.mass.edu/

Advanced Robotics Intensive (ARI), through Quinsigamond Community College, utilizes a variety of approaches to robotics like summer camps and middle school after-school programs to provide students with math and science enrichment and real life teamwork experiences. Contact Betty Lauer at: blauer@qcc.mass.edu or (508) 854-2765. www.qcc.edu.

National Center for Technological Literacy Museum of Science, Boston The *Gateway to Technology and Engineering* program was established to help school districts develop strategic plans to implement K-12 technology and engineering programs, while introducing educators to resources supporting standards-based curricula and assessments. Contact Yvonne Spicer at: yspicer@mos.org or (617) 589-3101. www.mos.org/nctl/k12_gateway.php

Phase II - College Degrees & Workforce Development

ABLE 4 STEM **UMass "ABLE 4 STEM"** denotes Associate's and Bachelor's Linked Education (ABLE) at four UMass campuses (4) in STEM disciplines. UMass works with the 15 MA public community colleges in a comprehensive, student-focused approach that aims to double the number of STEM degrees awarded at both the associates of science and bachelor of science levels over a four year period. Contact: John Cunningham at: jcunningham@umassp.edu or (617) 287-7050. www.able4stem.org

National Center of Excellence BATEC Computing and Information Technologies **BATEC's "Big Data"** program provides training and curriculum development for faculty in order to build the necessary programs for students as well as displaced and incumbent workers seeking to upgrade or develop their knowledge and skills in Information Technology. Contact: Deb Boisvert at Deborah.Boisvert@umb.edu or (617) 287-7295. www.batec.org.

"Western Regional Partnership" is a workforce development project in the areas of advanced manufacturing. The STEM Western Regional Partnership schools include McCann Technical School, Putnam Vocational High School, Westfield Vocational High School and Franklin County Vocational High School. Contact James Brosnan at: jbrosnan @mccanntech.org or (413) 663-5363. www.mccanntech.org.

MCLA's "STEM Pathways Project" (SSPP) promotes student success with the goal to increase graduation rates by providing strategic and successful initiatives which address students' academic, experiential, and career awareness interests. The program delivers enhanced academic support, advising, and career planning, and marshals the efforts of both the academic affairs and student affairs divisions. Contact Monica Joslin at: m.joslin@mcla.edu or (413) 662-5242. www.mcla.edu.

Central Mass WIB's "STEM Power" project re-engineers Career Center practices, procedures and policies to provide a sector-based approach to nearly all facets of the services offered to dislocated workers including job seeker STEM pathways outreach, orientation and education; STEM related pathways career counseling; training; placement for job seekers; and STEM employer engagement and support. Contact: Jeffrey Turgeon at TurgeonJ@worcesterma.gov or (508) 799-1590. www.worcesterma.gov/development.

Phase III & IV - Student Interest/Achievement & Educator Effectiveness

is designed to improve mathematics instructional quality in pre-kindergarten (pre-K) programs, using the Building Blocks curriculum and Boston Public Schools (BPS) coaching supports. This hybrid model has demonstrated strong gains in student engagement and mathematics learning in BPS pre-K classrooms and has contributed to closing the achievement gap. Contact Michelle High-Mckinnon at: mhighmckinnon@bostonpublicschools.org or 617-635-9063. http://bpsearlychildhood.weebly.com/boston-k1ds.html

Science from Scientists (SfS) sends real, charismatic scientists into classrooms during the school day every other week throughout the year to teach hands-on, frameworks-relevant STEM lessons to students in grades 4-8. The goals of the SfS program are to improve student attitudes and aptitudes in STEM (evaluated by student performance on the STE MCAS and pre- and post- quizzes throughout the year) and to support classroom teachers through a free Professional Development Program designed to build on SfS classroom visits. Contact: Erika Angle at erika@sciencefromscientists.org. Web: http://sciencefromscientists.org/

is a fun, flexible, rigorous summer STEM program for middle school students, where students work in teams to learn about computer programming, robotics, and space engineering while gaining hands-on experience coding SPHERE satellites. The program culminates in a tournament where teams compete for a spot to race a SPHERE satellite against other teams aboard the International Space Station (ISS). Contact Katie Magrane at kmagrane@massafterschool.org or (617) 338-0040. www.massafterschool.org.

is a team based transformative educational program designed for 6th, 7th, and 8th grade students in which students imagine and design cities of the future and explain the underlying technologies and design principles that would make their city possible. Students create both physical scale models and virtual models (utilizing SimCity software), prepare presentations/Q&A responses, and write research documents as part of their engineering design process. Contact Reed Brockman at: reed.brockman@aecom.com, 617-240-7979 or Meelynn Wong at mwong@mnreb.org, 617-871-1115.

Increasing Accessibility to Algebra & Geometry for All Students (IAAG) is a teacher professional development project, which offers math content and pedagogical strategies for general education, ELL and special education mathematics teachers of grades 5 through 10. It strengthens teachers' understanding of various algebraic and geometric concepts. Teachers learn universal design strategies and techniques to increase accessibility of rigorous mathematics to a broad range of learners. Contact: Karin LeBeau at Karin.lebeau@umassmed.edu or (508) 856 - 1529.

ROOM ASSIGNMENTS

DCU CENTER – 1ST FLOOR

Site	Room	AM Breakout I (9:45-11:00)	AM Breakout II (11:15-12:30)	PM Breakout (2:30-3:45)
DCU	Lobby	Registration		
DCU	Plenary Hall	Plenary Area: Breakfast, Lunch, and Closing Session		
DCU	Exhibit Hall	Resource and Sponsor Exhibits Hall		
DCU	Showcase Corner	**Policy:** Massachusetts' STEM Workforce - Employer Needs and Policy Implications (I)	**Higher Ed - 2-year:** Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways (I)	**Career Awareness/Workforce Dev:** Uniting Public and Private Partners to Ignite Moments of STEM Discovery

DCU CENTER – 2ND FLOOR

Site	Room	AM Breakout I (9:45-11:00)	AM Breakout II (11:15-12:30)	PM Breakout (2:30-3:45)
DCU	Conference Room 210A	**Career Awareness/Workforce Dev:** Massachusetts' Computing Education Agenda - Opportunities and Equity for Work & Life	**Career Awareness/Workforce Dev:** Aligning Expectations Between Community College Life Sciences Programs and Life Sciences Companies	**Innovation & Entrepreneurship:** Purpose, Passion and the Quest for 'Why?': Today's College Students Yearn To Make Sense Of STEM
DCU	Conference Room 210B	**Higher Ed - 2-year:** Raising the Bar with a Low Threshold - Teaching the Computational Process in an Introductory Course to Computer Science	**K-12 Ed:** Strategies for Teachers to Support English Learners in Mathematical Reasoning and Communication	**Higher Ed - 4-year+:** Massachusetts Integrative Science in Higher Education – Assessment: How Do You Know It's Working?

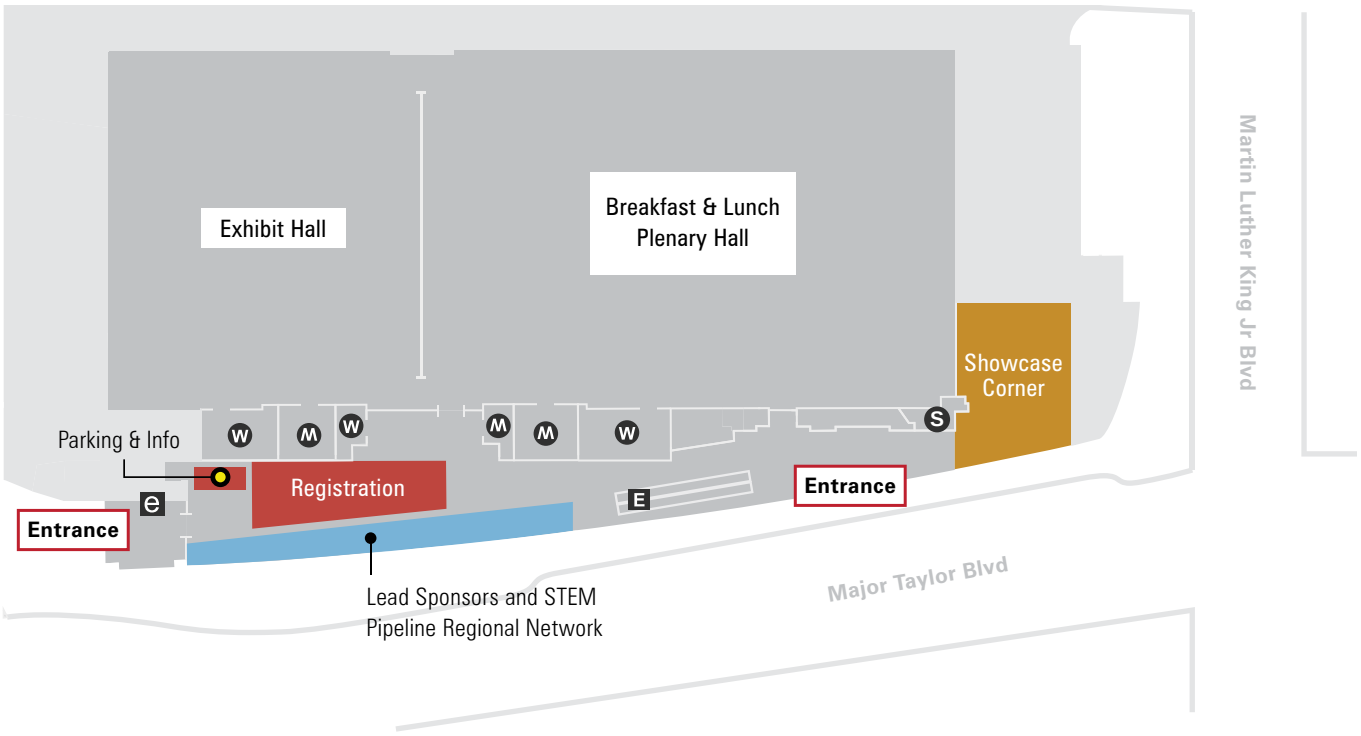
DCU CENTER – 3RD FLOOR

Site	Room	AM Breakout I (9:45-11:00)	AM Breakout II (11:15-12:30)	PM Breakout (2:30-3:45)
DCU	Atrium		**Out-of-School Time:** The STEAM Engine - An Un-Conference for Out-of-School Educators, Directors, Volunteers & the Flight Crew (Part I)	**Out-of-School Time:** The STEAM Engine - An Un-Conference for Out-of-School STEAM Educators, Directors, Volunteers & the Flight Crew (Part II)
DCU	Grand Ballroom South	**Early Ed:** Growing Up WILD - Family-style	**Early Ed:** A Panel Discussion and Demonstration on Being an Effective Early Childhood STEM Educator	**K-12 Ed:** Connecting Classroom Strategies to Real-World STEM through an Integrated Learning Approach
DCU	Grand Ballroom Center	**K-12 Ed:** Engage with Engineering - Preparing a Science Department to Integrate Engineering Practices into its Courses	**K-12 Ed:** Building Successful Collaborative Partnerships for Effective STEM Professional Development for K-12 Educators	**Higher Ed - 4-year+:** Cultivating our Next-Generation STEM Workforce - Early Undergraduate Research and Mentoring Programs from Bridgewater State and UMass
DCU	Grand Ballroom North	**K-12 Ed:** Common Core and STEM – Will Standards and Assessments Make a Difference?	**K-12 Ed:** Engaging Students Through Authentic Research	**Digital Ed:** Digital Resources for STEM - What They Look Like in the Classroom
DCU	Meeting Room A	**Career Awareness/Workforce Dev:** The Intersection of STEM and Healthcare - Developing a Diverse Workforce	**K-12 Ed:** STEM Integration for District Leaders - Strategically Planning for District-wide STEM Implementation	**K-12 Ed:** The Gateway to STEM Careers is Being Future Ready
DCU	Meeting Room B	**K-12 Ed:** Bootstrap - Teaching Algebra Through Video Game Programming	**STEM in Gateway Cities:** Taking STEM Learning Models to Scale in Gateway Cities - From Research to Policy and Practice	**Policy:** Massachusetts' STEM Workforce - Employer Needs and Policy Implications (II)
DCU	Meeting Room C	**Higher Ed - 4-year+:** Massachusetts Integrative Science in Higher Education – What's Going On in 2014?	**Career Awareness/Workforce Dev:** Working for the Nation's Space Program: NASA Resources in the Commonwealth	**Higher Ed - 2-year:** Innovative Approaches in Recruiting, Enrolling, Retaining, and Completing Students in STEM Pathways (II)
DCU	Meeting Room D	**Research & Practice:** Fostering Student Motivation and Achievement - Research to Practice and Lessons Learned from the ITEST Program	**Early Ed:** Five New Innovative Pre-School STEM Curricula Developed Through a DEEC Grant Program	**Early Ed:** Infant/Toddler STEM Session - Engaging Educators with Diverse Hands-on Ways to Introduce Science & Math into the Infant/Toddler Learning Environment
DCU	Meeting Room E	**Out-of-School Time:** Data Collection Tools in Out-of-School Time - Evaluating Program Quality & Student Interest	**Digital Ed:** Global STEM Education - The Whys, Whats and Hows of Educating for the 21st Century	**Early Ed:** Creating Intentional Learning Opportunities - Infusing STEM into Your Preschool Classroom
DCU	Junior Ballroom	**Digital Ed:** Computer Science - The Essential Subject We're Not Teaching	**Higher Ed - 4-year+:** How Do You Build It? A Practical Workshop on Designing an Integrative STEM Module	**K-12 Ed:** Teaching with MIT's App Inventor in your Classroom - Bring Mobile App Development to Life in Your 5-12 Curriculum

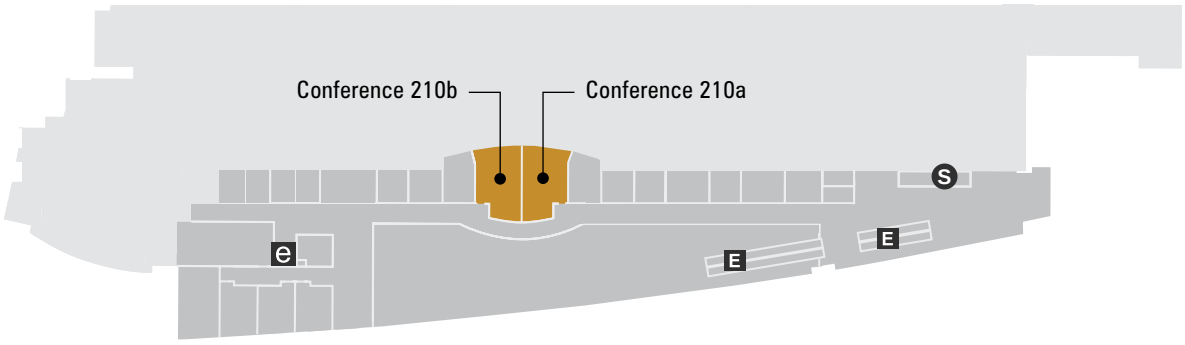
HILTON – 2ND FLOOR

Site	Room	AM Breakout I (9:45-11:00)	AM Breakout II (11:15-12:30)	PM Breakout (2:30-3:45)
Hilton	Perennials	**K-12 Ed:** Increasing Accessibility to Algebra & Geometry for ALL Students	**Innovation & Entrepreneurship:** Inspire Invention - Programs and Strategies for Every MA School	**K-12 Ed:** BLOSSOMS - Active Learning for High School STEM Classes, with Professional Development for Teachers
Hilton	Picknelly Board Room	**K-12 Ed:** Marlborough Public Schools - STEM Early College High School Model	**Research & Practice:** Examining District and School Supports for Integrating K-12 STEM Education, Research, and Practice	**Career Awareness/Workforce Dev:** Preparing Students for Careers in Advanced Manufacturing

LEVEL ONE



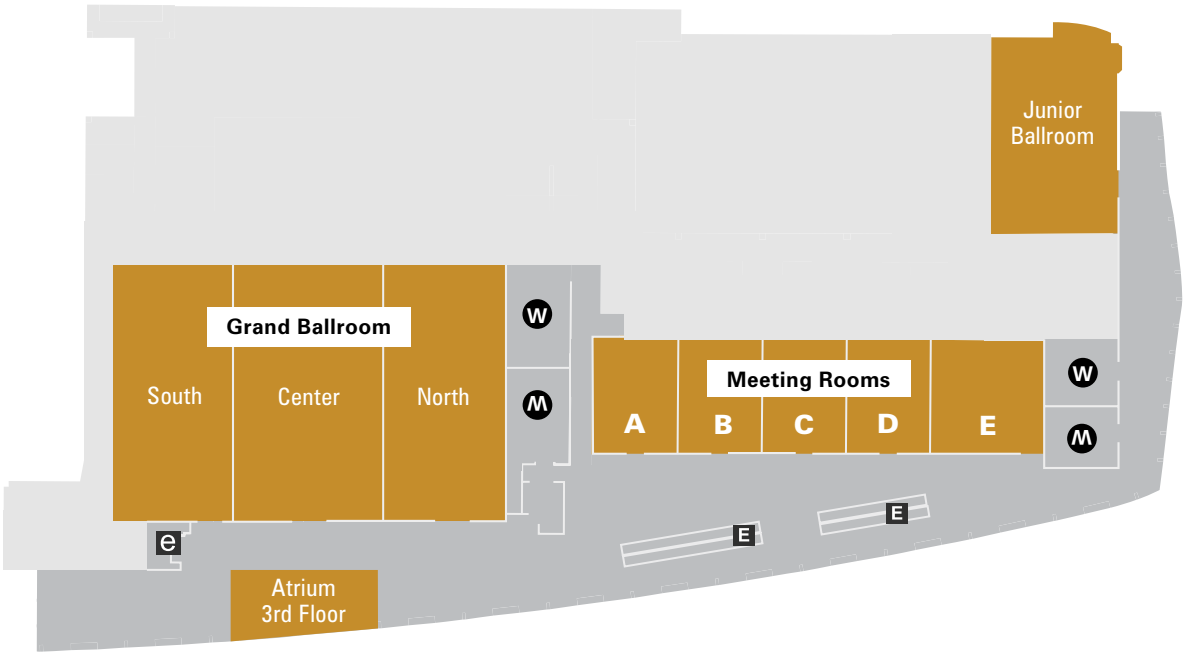
LEVEL TWO



Legend

Breakout Session Location | Women's Room | Men's Room | Escalator | Elevator | Stairs

LEVEL THREE



HILTON GARDEN INN

Legend

Breakout Session Location | W Women's Room | M Men's Room | E Escalator | e Elevator | S Stairs

Special Thanks

Cora Beth Abel, MA State Science & Engineering Fair
Jennifer Aizeman, Bridgewater State University
Dale Allen, Quinsigamond Community College
Scott Auerbach, UMass Amherst
Dianne Bardsley, Markman Children's Programs
Barbara Berns, EDC
Ayora Berry, PTC
Gerry Brody, Retirees' School Volunteers Assoc.
Jim Brosnan, McCann Technical High School
Maryann Bryan, Weymouth Public Schools
Susan Buckey, The Work Place
Marybeth Campbell, Executive Office of Education
Ronit Carter, Empowering Excellence
David Cedrone, MA Dept. of Higher Education
JD Chesloff, MA Business Roundtable
Connie Chow, Science Club for Girls
Robert Cody, Cape Cod Community College
Keith Connors, MA Dept. of Higher Education
Kristen Cormier, UMass President's Office
Maria Cotto-Vargas, UMass Online
Martha Cyr, WPI
Marilyn Decker, MA Dept. of Elementary & Secondary Education
Marjorie Dennis, Northeast STEM Network
Julie DeRoche, Georgetown Public Schools
Sarah Dunton, Girl's Inc.
Humera Fasihuddin, VentureWell
Ben Forman, MassINC
Jake Foster, MA Dept. of Elementary & Secondary Education
Adam Freudberg, Office of Governor Patrick
Arthur Goldstein, Bridgewater State University
Vicki Grisanti, Robotics Education and Competition Foundation
Patricia Hallberg, Girl Scouts - Central and Western MA
Peter Holden, STARBASE Academy, Hanscom AFB
Katherine Honey, SE STEM Regional Network
Barbara Jorda, STEM Beginnings
Monica Joslin, MCLA
Sung Kim, Cambridge Science Festival
Karin Lebeau, Central STEM Regional Network/UMMS
Eric Lieberman, MA Dept. of Early Education and Care
Tara Mann, WPI
Sandy Mayrand, UMass Medical School, retired
Maureen McDonald, UMass Donahue/Head Start
Anne McGrath, Intel
Barbara McNulty, UMass President's Office
Scott Morrison, Manchester-Essex RSD
Yolanda Neville, Lesley University
Keanna Nordstrom, EDC
Stacey O'Neil, UMass Online
Raji Patel, MA Space Grant Consortium/MIT
David Petty, Winchester Public Schools
Shay Pokress, Project Lead The Way, Inc.
Kelly Powers, MassCAN/EDC
Maryellen Rancourt, North Shore Technical HS
Ruth-Ann Rasbold, UMass Donahue/Head Start
Sandra Ryack-Bell, Museum Institute for Teaching Science
Allison Scheff, MA Dept. of Higher Education
Larisa Schelkin, Global STEM Education Center
Cheryl Scott, Executive Office of Labor and Workforce Development
Som Seng, UMass Online
Kim Spangenberg, The Virtual High School
Yvonne Spicer, National Center for Technological Literacy
Jim Stanton, MassCAN/EDC
Sheila Sullivan-Jardim, Brockton Area WIB
MeeLynn Wong, MetroNorth REB

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