Linda K. Barry, M.D., FACS is a board certified liver and pancreas surgeon with a unique background in both clinical and basic science research. As an Associate Professor of Surgery, Dr. Barry practices and teaches at the University of Connecticut Medical School, as well as holds the position of Assistant Director and Chief Operating Officer of the Connecticut Institute for Clinical and Translational Science (CICATS) at the University of Connecticut. She also serves as Director of the Young Innovative Investigator Program and the CICATS M1 Mentorship Program which both focus on increasing underrepresented students in STEM academic programs.

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Integrating Science, Math, ELA, and Social Studies into an Elementary NGSS-Aligned Unit

Gail Emilsson, Rachel Shurick, and Heather Lichtlin; Professional Development Specialists – Connecticut Science Center
We created a unit for third grade that bundles Next Generation Science Standards (NGSS) performance expectations about weather and climate, heredity, survival, and evolution. We outline how we anchored the unit on the phenomenon of declining polar bear populations due to climate change. We created an inquiry process that incorporates Common Core State Standards mathematics, English language arts, and social studies in genuine ways that facilitate the learning and appreciation of science. Participants will examine the NGSS performance expectations and brainstorm about ways that phenomena, and also engineering design problems, can be used to drive inquiry and link STEM disciplines to other subject areas.

**STEM + Music = A Match Made in an Integrated Classroom**  
*Becky Saraceno; PK-5 Vocal Music Teacher – Florence E. Smith STEM Elementary School*  
**Location:** Lab 1 – Street Level  
**Level:** Grades Pre K – 8

STEM and Music can be integrated naturally and authentically to provide meaningful, rich learning experiences. During this session, I will share how I integrated STEM into my music classroom. Participants will have opportunities to “notice” and “wonder” as I share how I incorporated the Scientific Inquiry Method, Engineering Design Process, and various technologies to provide all students with hands-on learning experiences in STEM while they continue to develop as musicians. However, my ideas are just the beginning. Together, we will explore even more ways to integrate our curricula!

**Super Cool Scientists – Using Storytelling and Coloring to Celebrate Women in STEM**  
*Sara MacSorley; Author – Super Cool Scientists*  
**Location:** Lab 2 – Street Level  
**Level:** Grades 3 – 8

The Super Cool Scientists story and coloring book was designed to celebrate women currently doing amazing work in STEM. The features let readers learn more about STEM topics and also what the life of a scientist is really like inside and outside the workday. The group of women included represents a wide range of fields from animal behavior research to industrial engineering to applied mathematics in medicine. The group is also very diverse, coming from a variety of backgrounds and experiences. Storytelling can be a powerful tool in making STEM accessible and inclusive.
Mud, Salt, and Inspiration: Project Oceanology and the Next Generation Science Standards
Molly Jacobs and Callie Sheetz; Marine Educator – Project Oceanology
**Location:** Lab 4 – Street Level
**Level:** Grades 6 – 12

Project Oceanology has offered hands-on, inquiry-based marine science education since 1972. The arrival of the Next Generation Science Standards (NGSS) challenged us to revise our curriculum to better support implementation of NGSS in our partner schools. We will guide participants through one of our new NGSS-focused lesson plans: participants will use real scientific data to build and evaluate models explaining how organisms interact with their environments in Long Island Sound. We will come back together as a group to discuss the importance of building experiential learning and scientific practice into STEM curricula at all grade levels.

*Note:* This workshop repeats in Session 3.

Bringing SWE to Your School
Jonna Gerken, President and Carolyn Begnoche, Outreach Coordinator – Society of Women Engineers
**Location:** Workshop – Exhibit Area: Level 4
**Level:** Grades Pre K – 12

This session will discuss the various ways educators can integrate engineering into their schools through the programs that the Society of Women Engineers (SWE) offers for K-12 students, teachers, and parents. We will cover SWE’s outreach activities and why it's important to introduce STEM concepts to girls as young as possible.

*Note:* This workshop repeats in Session 3.

Mathematicians STEM From Here!
Erin Wilson-Ruff; Instructional Coach – Annie Fisher STEM Magnet School
**Location:** Genomics Classroom – Exhibit Area: Level 5
**Level:** Grades Pre K – Career Readiness

Participants will actively engage in a hands-on, math inquiry investigation in collaborative groups that support problem solving, meaningful discourse, and argumentation in mathematics. Instructional protocols in mathematics will be incorporated to engage all learners and increase conceptual understanding of grade-level standards while modeling the standards of practice. Participants will also be given instructional tools and resources to enhance planning for active learning in an elementary math classroom. While this session is geared to specific elementary math grade level standards, the instructional practices and protocols that will be modeled can be incorporated in grades K-8.

*Note:* This workshop repeats in Session 3.
Panel Discussion: “Hidden Figures: Breaking in, Looking up and Shattering the Newest Glass Ceiling”  
Location: Theater - Level 1

Our hope is to engage attendees of the CT STEM Conference in a discussion about the dearth of women and people of color in STEM and how to encourage more underrepresented populations to pursue STEM careers. What can attendees do to mentor youth and help them to gain confidence and see themselves in these fields? How can they leverage support from industry to learn more about these careers to better understand them and provide their students with opportunities to understand what these careers might entail?

Develop 3D Assessments for NGSS Performance Expectations  
Crystal Caouette; STEM Theme Coach – Capitol Region Education Council  
Location: Science Hall - Level 1  
Level: Grades 3 – 12

Participants will view three-dimensional (3D) assessments written to monitor student achievement of the Next Generation Science Standards (NGSS) Performance Expectations. As a large group, we will discuss the resources and protocols used for these assessments and compare these strategies to the development of state level assessments supported through the Council of Chief State School Offices through the Science Assessment Item Collaborative. As time permits, we will utilize the protocol as grade level groups will work with a Performance Expectation, identify evidence of learning and write questions to assess the PE.  
Note: This workshop repeats in Session 4.

Science and Literacy: A Natural Fit  
Jeff Winokur and Cindy Hoisington; Early Childhood and Elementary Science Educators – Education Development Center, Inc.  
Location: Lab 1 – Street Level  
Level: Grades Pre K – 1

When children are engaged in doing science they are motivated to use speaking/listening skills, vocabulary in context, and reading/writing for authentic purposes. This interactive session will focus on facilitating productive science talks with Pre-K, Kindergarten, and Grade 1 students in the context of Next Generation Science Standards aligned science investigations. Participants will engage in first-hand experiences that promote conceptual and language development. Participants will also observe and collaboratively analyze classroom video for evidence of teacher strategies that support thinking and language. The session will incorporate approaches that focus on children
learning English as a second language and on brainstorming challenges to integration.

Note: See how one teacher incorporated productive talk into her classroom in session 3. “So, Are You Saying…?: Productive Talk Circles K-4”

Incorporating the Science and Engineering Practices into your NGSS Science Classroom
Christine Lawlor-King, Director of Education and Susan Mostowy, Director of Operations – Connecticut Invention Convention

Location: Lab 2 – Street Level
Level: Grades 3 – 8

With Next Generation Science Standards (NGSS) implementation, science teachers are asked to teach the engineering design process. Many educators are anxious about incorporating engineering practices into their curriculum. Learn how to implement the engineering practices crucial to NGSS implementation and STEM through creative problem solving and invention education. You will explore the engineering design process and understand the importance of invention logs. You will leave with activities you can implement in your classroom as part of your NGSS curriculum.

Atherosclerosis, Engineering, and Turbohawks!
Keith Sevigny, STEM Coach – Annie Fisher STEM Magnet School

Location: Lab 4 – Street Level
Level: Grades 3 – 12

In this workshop, participants will take part in hands-on activities in order to engage with various aspects of the Engineering/Design Process and inquiry-based learning. The focus will be on a biomedical engineering unit that was developed at Annie Fisher STEM Magnet School in Hartford, CT for implementation in a middle school classroom. Attendees will leave with electronic access to curriculum materials in order to pilot an engineering unit of study, which focuses on the treatment of cardiovascular disease.

Note: This workshop repeats in Session 4.

Becoming a Teacher Leader for STEM Implementation or Personal Growth
Gail Emilsson; Personal Development Specialist – Connecticut Science Center
Location: Workshop – Exhibit Area: Level 4
Level: Birth – Career Readiness

This session will introduce some facilitation tools and techniques that teachers can use to organize and structure professional learning communities to help with STEM or Next Generation Science Standards (NGSS) implementation. STEM or NGSS expertise is NOT required but a desire to grow is! The tools presented allow even leader novices to get started with the strategy of using protocols to do difficult self-reflective work as teachers take on the enormous task of questioning
years or perhaps decades of teaching practice. In this way, teacher leaders create a space for collaborative group learning while also growing themselves.

**Young Scientists Lead the Way**  
*Danielle Larkin, 4th Grade Teacher – Mapleshade School, East Longmeadow, MA*

**Location:** Genomics Classroom – Exhibit Area: Level 5  
**Level:** Grades 3 – 5

This workshop will allow you to put your elementary students in charge of their own learning. You and your students will become partners in the science classroom. Uncover fresh teaching ideas to engage and empower your students. Let them lead the way in making science discoveries and creating engineering marvels. This workshop will incorporate different strategies and ideas for crafting a unit from engagement to assessment.

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**Session 3: 12:45 p.m. – 1:45 p.m.**

**Keynote Speaker**  
*Linda K. Barry, M.D., FACS – University of Connecticut Medical School*

*Introduction by the Dean of University of Hartford’s College of Education, Nursing and Health Professions, David H. Goldenberg*

**Location:** Theater – Level 1

Linda K. Barry, M.D., FACS is a board certified liver and pancreas surgeon with a unique background in both clinical and basic science research. As an Associate Professor of Surgery, Dr. Barry practices and teaches at the University of Connecticut Medical School, as well as holds the position of Assistant Director and Chief Operating Officer of the Connecticut Institute for Clinical and Translational Science (CICATS) at the University of Connecticut. She also serves as Director of the Young Innovative Investigator Program and the CICATS M1 Mentorship Program which both focus on increasing underrepresented students in STEM academic programs.

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Shift Towards STEM Inquiry
Heather Lichtlin; Professional Development Specialist – Connecticut Science Center
Location: Science Hall - Level 1
Level: Grades Pre K – 12

With Connecticut's adoption of the Next Generation Science Standards, traditional classroom instruction will have to make a shift towards more inquiry-based instruction. However, there's no reason to completely start from scratch. There are many strategies that can help us shift our existing STEM lessons toward a more inquiry-based approach. Let's find out how minor alterations in our lessons can lead to powerful transformations in student learning.

So, Are you Saying…….?: Productive Talk Circles
Patricia McMahon, Carolina Mendez; Teachers – Charles H. Barrows STEM Academy and Kristen Schmalbach; Teacher – Windermere Elementary School
Location: Lab 1 – Street Level
Level: Grades K – 4

Presenters will share strategies to implement and foster productive talk circles in grades K-4 classrooms. Participants will engage in videos and walk away with material to help bring productive talk into their own classrooms and create a discourse-rich classroom culture. The presenters include kindergarten and 1-4 grade level teachers. Presenters will highlight how productive talk circles evolve and increase in rigor across K-4 grade levels.

Note: Attend a session that addresses productive talk in Session 2. “Science and Literacy: A Natural Fit

LEGO Robotics: From Having No Team to Hosting the Hartford Invitational”
Dario Soto; STEAM Coach – Rawson STEAM School
Location: Lab 2 – Street Level
Level: Grades 3 – 8

Rawson Lighthouse School currently has two LEGO robotics teams with all 30 members. We competed in three events, won some new LEGO trophies, cried a small bit, cheered a ton, and had a crazy amount of fun. We went into creating a LEGO team thinking that our students would learn about robots and some computer stuff, but it was so much more of a life learning experience for all of us. We will share our start-up journey and empower others with tips and inspiration so they can step out on their own path to create a LEGO robotics team.

Mud, Salt, and Inspiration: Project Oceanology and the Next Generation Science Standards
Molly Jacobs and Callie Sheetz; Marine Educator – Project Oceanology
Location: Lab 4 – Street Level
Level: Grades 6 – 12
Project Oceanology has offered hands-on, inquiry-based marine science education since 1972. The arrival of the Next Generation Science Standards (NGSS) challenged us to revise our curriculum to better support implementation of NGSS in our partner schools. We will guide participants through one of our new NGSS-focused lesson plans: participants will use real scientific data to build and evaluate models explaining how organisms interact with their environments in Long Island Sound. We will come back together as a group to discuss the importance of building experiential learning and scientific practice into STEM curricula at all grade levels.

Note: This workshop repeats in Session 1.

Bringing SWE to Your School
Jonna Gerken, President and Carolyn Begnoche, Outreach Coordinator – Society of Women Engineers
Location: Workshop – Exhibit Area: Level 4
Level: Grades Pre K – 12

This session will discuss the various ways educators can integrate engineering into their schools through the programs that the Society of Women Engineers (SWE) offers for K-12 students, teachers, and parents. We will cover SWE’s outreach activities and why it's important to introduce STEM concepts to girls as young as possible.

Note: This workshop repeats in Session 1.

Mathematicians STEM From Here!
Erin Wilson-Ruff; Instructional Coach – Annie Fisher STEM Magnet School
Location: Genomics Classroom – Exhibit Area: Level 5
Level: Grades Pre K – Career Readiness

Participants will actively engage in a hands-on, math inquiry investigation in collaborative groups that support problem solving, meaningful discourse, and argumentation in mathematics. Instructional protocols in mathematics will be incorporated to engage all learners and increase conceptual understanding of grade-level standards while modeling the standards of practice. Participants will also be given instructional tools and resources to enhance planning for active learning in an elementary math classroom. While this session is geared to specific elementary math grade level standards, the instructional practices and protocols that will be modeled can be incorporated in grades K-8

Note: This workshop repeats in Session 1.
Session 4: 2:00 p.m. – 3:30 p.m.

**Town Hall Meeting**  
**Location:** Theater - Level 1

Come listen and speak your mind at our STEM Town Hall. In this open forum you will determine what questions are most pressing in STEM, P-12 education and the industries shaped by those of us in STEM. There will be stakeholders from P-12 education, business and industry, educator preparation and the fields of STEM to respond and each issues raised will be explored.

**Develop 3D Assessments for NGSS Performance Expectations**  
*Crystal Caouette; STEM Theme Coach – CREC*  
**Location:** Science Hall - Level 1  
**Level:** Grades 3 – 12

Participants will view three-dimensional (3D) assessments written to monitor student achievement of the Next Generation Science Standards (NGSS) Performance Expectations (PE). As a large group, we will discuss the resources and protocols used for these assessments and compare these strategies to the development of state level assessments supported through the Council of Chief State School Offices through the Science Assessment Item Collaborative. As time permits, we will utilize the protocol as grade level groups will work with a Performance Expectation, identify evidence of learning and write questions to assess the PE.  
*Note: This workshop repeats in Session 2.*

**A Seat for Humpty: STEM Projects for the Primary Grades**  
*Sudha Swaminathan; Professor – Eastern Connecticut State University*  
**Location:** Lab 1 – Street Level  
**Level:** Grades Pre K – 2

Using children's literature and well-known children's poetry, we can develop STEM projects that incorporate engineering principles, the Next Generation Science Standards practices and the Common Core Math content and practices. During the presentation, I will share the planning framework and engage the audience in sample STEM projects such as designing a seat for Humpty to prevent his fall. Participants will be guided to analyze the relevant science and math content involved, including designing and implementing appropriate formative and summative assessments that focus on documenting and evaluating children's science and math content knowledge and practices.
Land Sailors: Sailing through Engineering Core Ideas in NGSS  
*Megan Strand; Education Specialist – New England Science & Sailing*  
**Location:** Lab 2 – Street Level  
**Level:** Grades Pre K – 12  

Come and learn how to incorporate STEM concepts into your classroom using a fun, competitive, and multi-disciplinary lesson! You will become the students as you design, engineer, and compete in teams against fellow classmates to build a land sailor that harnesses the power of wind sails, a PVC frame, and wheels. Calculate speed as your team experiments with different frame designs, sail shapes and sizes, and wheel placement. As you compete you’ll be incorporating the Engineering Core Ideas in Next Generation Science Standards, and you’ll see how easy it can be to have students solve real-world problems through engineering.

Atherosclerosis, Engineering, and Turbohawks!  
*Keith Sevigny, STEM Coach – Annie Fisher STEM Magnet School*  
**Location:** Lab 4 – Street Level  
**Level:** Grades 3 – 12  

In this workshop, participants will take part in hands-on activities in order to engage with various aspects of the Engineering/Design Process and inquiry-based learning. The focus will be on a biomedical engineering unit that was developed at Annie Fisher STEM Magnet School in Hartford, CT for implementation in a middle school classroom. Attendees will leave with electronic access to curriculum materials in order to pilot an engineering unit of study, which focuses on the treatment of cardiovascular disease.  
*Note: This workshop repeats in Session 2.*

Design Thinking in the Global STEAM Classroom  
*Erin Dowd; Director of Curriculum – Level Up Village and Oletha Walker; Teacher – John F. Kennedy Elementary School*  
**Location:** Workshop – Exhibit Area: Level 4  
**Level:** Grades 3 – 8  

As teachers, we innovate because we have to in order to provide the experiences necessary for students to become successful, contributing members of society. In order for this to happen, students must learn how to innovate as well, and they cannot do it alone. This is why incorporating design thinking and 21st Century skills into the school day is so important. In this session, Oletha Walker, teacher at John F. Kennedy Elementary School, will share her experiences with the Level Up Village Global Inventors course and how she wrote a grant to make global connection a reality for her students.
“Operation” Recycle
Erica McNeil; Science Teacher – Shelton Intermediate School
Location: Genomics Classroom – Exhibit Area: Level 5
Level: Grades 3 – Career Readiness

During this interactive session participants will use recycled materials to create a human body system model. This hands-on model will provide the basis of a researched simulated disease. Using the hands-on model participants will perform a simulated surgical “operation” to correct the body system’s disease. This innovative STEM project will create a real life scenario in your classroom aligned to Next Generation Science Standards and connected to an innovative STEM career. Engineering a human body system and using advanced technology to simulate surgery will likely spark any student’s interest and encourage active learning of the human body!