W-1: Think Like an Engineer with Phenomenal Instruction

John Gantt - Amplify Science

Egg drop & more! Learn how engineering internships incorporate the Science & Engineering Practices from the NY State Science Learning Standards. Educators will engage with hands-on activities, digital tools, active reading and discussion - integrating phenomena-based instruction around real-world problem solving.

Target Audience: General Science, K-8.


Maria Brown - Sayville HS/Stony Brook University
Janet Kaczmarek - Sayville High School and Stony Brook University

Participants will learn how to design a survey and collect data in the field using the ArcGIS Online Survey 123 Application and learn how to visualize and analyze the data using ArcGIS Online. ArcGIS Online Storymaps will be introduced as a mode of communicating the results allowing for interactive maps, video and images to communicate science for all audiences through map visualization. Participants will have the opportunity to investigate GIS lessons readily available as open source materials for immediate implementation into Life, Earth, and Environmental Science classes. This workshop aligns to the NGSS systems modeling theme using technology to address phenomena. It is hands-on and fun for students in grades 4-16! Participants will also receive information on how they can get FREE accounts for their Districts and FREE additional training.

Target Audience: Life Sciences, Earth and Space Sciences, General Science, Applied Science, STEM: Upper Elementary (3-5), Intermediate (6-8), High School (9-12)

W-3: Spark CURIEosity: Our Beta Version of Nuclear NYSSLS

Stephanie O’Brien, Martin Palermo, Kimberly King, Thomas Van Bell, Krista Klicpera/New York State Master Teachers

Are you looking to for a NYSSLS ready unit to use in your classroom? This nuclear workshop is da bomb. Participants will be provided with a google drive of all lessons and activities to support a NYSSLS aligned unit that can be readily implemented.

Target Audience: Chemistry: High School (9-12),

W-4: Methods of Supporting NYSSLS through Outdoor Activities and Field Trips

Dan Oggeri - Western Suffolk BOCES

For many teachers, the outdoors is an untapped resource that can be used as a spring board for various science topics grades 6-12. During this session, teachers will have the opportunity to learn about various nature centered activities that can be implemented into their classrooms and how they align to the NYSSLS. Additionally, field trips can be a terrific opportunity for students to expand their science knowledge. Teachers will have the opportunity to learn about various science field trips and how they can enhance their instruction.

Target Audience: Upper Elementary, STEM

W-5: Supporting English Language Learners in NYSSLS

Emily Kang - Adelphi University

The NYS Science Learning Standards call for students to engage in making sense and discourse, both of which can be language-intensive. This workshop will provide participants with practical ways to engage English language learners (and, indeed, all learners) in making sense of phenomena and solving problems through a functional approach to language. Sample lessons will be shared.

Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, General Science: Upper Elementary (3-5), Intermediate (6-8), High School (9-12)

W-6 : NASA: Space Food & Nutrition

Barbie Buckner - NASA Goddard Space Flight Center

Join us as we take a deeper look into the purposeful integration of the science and engineering practices into everyday instruction. Participants will be immersed in a hands-on phenomena that could be used to address three-dimensional learning in their own classrooms. Time will be taken to reflect on how teachers could begin to or continue to integrate three-dimensional teaching this year and in the future.

Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, General Science, Applied Science, STEM: Lower Elementary (PK-2), Upper Elementary (3-5), Intermediate (6-8), High School (9-12), College

W-7: Engaging Creativity & Curiosity in Your K-5 Classroom

CreositySpace LLC

Tobias Hatten-N Great Neck Public Schools/NYS Master Teacher
Any Swiss- William Floyd School District/NYS Master Teacher

Use innovation and entrepreneurship to help your students connect with and see value in their ideas. Join materials engineer Kath Geramita as she shares how you can incorporate innovation and authentic experiences to create a collaborative environment and deeper thinking in your classroom. In this workshop, Kath will discuss, and work with participants on, straightforward tools, tips and strategies to integrate innovation, entrepreneurship, and cross-curricular thinking into your elementary classroom.

Target Audience: General Science, Engineering, STEM, Cross-curricular teaching: Lower Elementary (PK-2), Upper Elementary (3-5)

W-8: Driving Regents Earth Science NYSSLS AssessFEST! Creating 3-D Assessments for the Regents Course

Tobias Hatten-N Great Neck Public Schools/NYS Master Teacher

What do the new 3 dimensional assessments look like in an Earth Science classroom? In this workshop participants will learn to create 3-D NYSSLS aligned Short Performance Assessments through a streamlined workflow process. Participants will be active as they collaborate to create a student-ready assessment that can be piloted with their students. Participants will also gain access to a digital toolbox to serve as a catalyst to the NYSSLS assessment transition. Participants should bring a device (iPad, laptop, etc...) to use in this workshop.

Target Audience: Earth and Space Sciences: Middle School, General Science

W-9: Systems Thinking Applied to Planet Earth’s Greatest Challenges

Gary Curts, STEM Implementation Specialist/Retired Educator, Activate Learning

Experience a novel approach to Earth science. This new pedagogy uses a “systems” approach for plate tectonics, astronomy, natural resources, geology, and paleoclimatology. There will be several take-home activities and ideas to implement or augment your existing Earth science curriculum. This curriculum is put together by AGI (American Geoscience Institute) out of Washington, DC.

Target Audience: Earth and Space Sciences

W-10: Organ Donation Biology Unit

LiveOnNY

LiveOnNY is the federal designated organ procurement organization (OPO) covering Long Island, NYC, and the lower Hudson Valley. Come learn about a biology unit that introduces organ donation while covering NYS Regents topics of homeostasis and immunology.

Target Audience: Middle School
Workshop Session #2

X-1: 3D CRISPR in the Classroom -Welcome to the age of genome editing
Dan Williams- Shelter Island UFSD
We will look at questions in evolution that can be answered by CRISPR/cas Genome Editing. This exciting new technology will enable scientists to edit the human genome easily, effectively and inexpensively. In an era when GMO’s and vaccines are questioned, what unique issues does CRISPR bring up? How do we teach this technology in a way our students can understand? Can we use CRISPR experiments in our classrooms? Is this just another form of GMO that will affect our food? This workshop will cover the biology of CRISPR, the history of discovery, the ethical questions and how you can actually do CRISPR experiments in your classroom.
Target Audience: Life Sciences, Earth and Space Sciences, General Science, Engineering, Applied Science, STEM: Lower Elementary (PK-2), Upper Elementary (3-5), Intermediate (6-8), High School (9-12), College

Maria Brown - Sayville HS/Stony Brook University
Janet Kaczmarek- Sayville High School and Stony Brook University
In this double session, participants will learn how to design a survey and collect data in the field using the ArcGIS Online Survey 123 Application and learn how to visualize and analyze the data using ArcGIS Online. ArcGIS Online Storymaps will be introduced as a mode of communicating the results allowing for interactive maps, video and images to communicate science for all audiences through map visualization. Participants will have the opportunity to investigate GIS lessons readily available as open source materials for immediate implementation into Life, Earth, and Environmental Science classes. This workshop aligns to the NGSS systems modeling theme using technology to address phenomena. It is hands-on and fun for students in grades 4-16! Participants will also receive information on how they can get FREE accounts for their Districts and FREE additional training.
Target Audience: Life Sciences, Earth and Space Sciences, General Science, Applied Science, STEM

X-3: TI Codes: Create a pathway towards STEM through projects
Dana Morse- Texas Instruments
Join us as we take a deeper look into the purposeful integration of the science and engineering practices into everyday instruction. Participants will be immersed in a hands-on phenomena that could be used to address three-dimensional learning in their own classrooms. Time will be taken to reflect on how teachers could begin to or continue to integrate three-dimensional teaching this year and in the future.
Target Audience: Engineering, STEM: Upper Elementary (3-5), Intermediate (6-8), High School (9-12)

X-4: Assessment and Re-Assessment in Regents Classes
Seth Guinauls-Kupperman
Participants will learn how to re-imagine assessments in order to give their students the fairest shot possible at success, both in class and on the Regents exam. Strategies such as Flipped Classroom, Standards-Based Grading, Student-Centered Learning and Layered Grading will be discussed.
Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, Physics: High School (9-12)

X-5: Creating a Professional Digital Journal
Michael Stano- Garden City High School
Journaling generally involves the practice of keeping a diary or journal that explores thoughts and feelings surrounding the events of your life. There are several different ways to do this. Journaling, as a stress management and self-exploration tool, works best when done consistently, but even occasional, sporadic journaling can be stress relieving when the practice is focused on gratitude or emotional processing. Teachers will learn how to setup a digital journal using google docs, tips to maintain consistency in adding entries, and how to make it an effective tool to improve professionally and personally.
Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, Physics, General Science, Engineering, Applied Science, STEM: Intermediate (6-8), High School (9-12), College

X-6: NASA: Using the Engineering Design Process to Build Satellites
Barbie Buckner- NASA Goddard Space Flight Center
JBring Engineering into the Classroom! Come be an Engineer!! Use the “Engineering Design Process” to ask, imagine, and design a satellite. After passing design review, build the satellite and perform a drop test to ensure mission success. Discuss results and improve the design while learning about current NASA missions to the Moon and on to Mars. Learn about other NASA’s Beginning Engineering Science and Technology (BEST) Activity Guides to extend the Engineering Design Process to other challenges while still making connections to NASA missions.
Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, Physics, General Science, Engineering, Applied Science, STEM: Lower Elementary (PK-2), Upper Elementary (3-5), Intermediate (6-8), High School (9-12), College

X-7: The Crabby Classroom: Using Horseshoe Crabs as Local Phenomenon
Ann Marie Mills- Islip UFSD
Experience the wonder of the Horseshoe Crab as you are walked through an Ecology Unit that ties these fascinating creatures to the standards. Come see how versatile they can be in your curriculum development by learning how to weave them into a wide range of topics including anatomy, evolution, climate change and more!
Target Audience: Life Sciences: Upper Elementary (3-5), Intermediate (6-8)

X-8: Developing Three-Dimensional Assessments
Melanie Cooper- Michigan State University
In this workshop, participants will use the Three-Dimensional Learning Assessment Protocol (3D-LAP see https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0162333) to help them develop, adapt and/or characterize assessment tasks. The 3D-LAP provides criteria for each dimension (DCIs, SEPs and CCCs) which helps teachers and assessment developers as they design tasks. Participants should be familiar with the Framework and three-dimensional learning and may find it helpful to bring existing assessment tasks for use in the workshop.
Target Audience: Life Sciences, Earth and Space Sciences, Chemistry, Physics, General Science: Intermediate (6-8), High School (9-12), College

X-9: Exploring Brookhaven National Laboratory stakeholder relations
Brookhaven National Laboratory Stakeholder Relations staff
Brookhaven National Laboratory delivers discovery science and trans-formative technology to power and secure the nation’s future. Primarily supported by the U.S. Department of Energy’s (DOE) Office of Science, Brookhaven Lab is a multidisciplinary laboratory with seven Nobel Prize-winning discoveries, 36 R&D 100 Awards, and more than 70 years of pioneering research. Join us on a facility tour to learn more.
Target Audience: All levels

X-10: Literacy in the Context of Science in the Middle School Classroom
Ellen Mintz- Activate Learning
Experience a lesson that demonstrates the integration of literacy strategies in the context of science. This includes the incorporation of academic language in written responses and oral discourses in conjunction with investigations using an interactive word wall.
Target Audience: Middle School
Y-3: FEATURED SPEAKER

Documenting and Reversing Decadal Water Quality Degradation on Long Island

Christopher Gobler
Stony Brook University

Sharing his perspectives and offering enlightening insights as Endowed Chair of Coastal Ecology and Conservation - Stony Brook University School of Marine and Atmospheric Science.

Target Audience: Gobler's research interest include Coastal ecosystem ecology, climate change, harmful algal blooms, phytoplankton, ocean acidification, effects of multiple stressors on coastal marine resources, aquatic biogeochemistry
Z-1: NASA: The Maker Movement and X-Planes
Barbie Buckner - NASA Goddard Space Flight Center

Come explore real-world connections with NASA research, X-planes, and the Maker Movement. Learn about one of NASA’s newest X-Planes, the X-37, an all-electric plane. Make connections back to electricity and circuits. Engage in activities about circuits, alternative energy, and batteries. Create, build, and test simple circuits. Leave with hands-on activities combining math, science, engineering, and technology for the classroom.

Target Audience: Chemistry, Physics, General Science, Engineering, Applied Science. STEM: Lower Elementary (PK-2), Upper Elementary (3-5), Intermediate (6-8), High School (9-12), College

Z-2: An Introduction to Structural Biology
John Halloran-Connetquot HS
Robert Bolen - Eastport South Manor SD

From enzymes to antibodies, a key component to understanding the molecules of life begins at the structural level. In the workshop, teachers will gain an understanding of the ways scientists discover the structure of important biomolecules and how the knowledge they uncover can be shared in the science classroom. Additional various research opportunities in structural biology, and specifically protein crystallography that are available to students will be discussed and explored.

Target Audience: Life Sciences, Applied Science, STEM: High School (9-12), College

Z-3: Integrating anchoring phenomena into middle school ecology: Eco-bottles
Elizabth Leone- Great Neck Public School
Thomas Livingston Great Neck Public School

In this workshop participants will be taken on a journey through a 3-D NGSS aligned anchored ecology unit. Participants will see how to start a unit with an anchoring phenomena, an eco-bottle garden, and then explore examples of how to refer back to that phenomena throughout the unit, including assessments. Most importantly, participants will see how to wrap up a topic once again connecting back to that anchoring phenomena through a parallel NGSS aligned 3-D assessment. After the presentation, teachers will have an opportunity to pursue resources to find and develop their own content relevant anchoring and investigative phenomena. Teachers should bring laptops or iPads to engage in the activity.

Z-4: Making Sense of Science: Developing & Using Scientific Models
Bryan Horan
Northport - East Northport UFSD

When we hear a student say, “I'm trying to figure something out”, he or she is applying their prior knowledge to a new situation. Scientific models are tools that students can use to visualize and make sense of things that they observe (i.e., phenomena). In this workshop, you will learn how to help your students move beyond simple drawings and physical models to constructing and using models that enable them to develop meaningful, evidence-based explanations of complex and puzzling phenomena. This workshop will also discuss tips to enhance students' modeling practices.

Target Audience: U High School (9-12), College

Z-5: Infusing Environmental Advocacy Through Letter Writing
AnnMarie Mills - Islip Schools
Veronica Weeks - Hauppauge Schools

Tired of the ‘Doom and Gloom’ that comes along with environmental issues?? Want to learn how to empower your students to make impactful change within their communities? Come see how we have incorporated letter writing into our curriculum and learn about four current local topics that provide opportunities for argument driven instruction and environmentalism for your students.

Target Audience: Life Sciences, General Science: Upper Elementary (3-5), Intermediate (6-8), High School (9-12)

Z-6: Engineering in the Science Classroom
Kathleen Dinota- Stony Brook University Engineering Teaching Lab

NYSSLS incorporates engineering practices into the science classroom. In this workshop, we will discuss how science, engineering and technology are inter-related and how each is incorporated in the new science standards. Participants will distinguish between science and engineering standards and the steps involved in the engineering design process. Simple strategies to begin implementing engineering in your middle and high school science classes will be shared. There will also be information provided about opportunities for field trips offered by the Stony Brook Engineering Education Laboratory.

Target Audience: Engineering: Intermediate (6-8), High School (9-12)

Z-7: Using Wet Labs and Current Events to STEMulate Biology Lessons
Presenter: Tamica Stubbs of Bio-Rad Explorers

F Learning biology is already exciting but can have a greater impact on student retention when these experiences are personally or globally relevant. In this session, participants will engage in two separate demos focused on Algal Blooms (Photosynthesis and Cellular Respiration) and the Genetic Basis of Opioid Dependence (SNPs) and one brief talk about our CRISPR kit to learn how to build out relevant story wrappers to add to or expand their current arsenal of biology lab experiences.

Target Audience: Life Sciences, Intermediate (6-8), High School (9-12)

Z-8: Station Lab Success
Ashley S Bloch- Islip UFSD
Stephanie Burns- Connetquot High School

"When viewed from the outside, do your labs meet the needs of your learners, and create equity for all? Do your labs improve student achievement or maintain status quo? Are you incorporating technology and research-based strategies to enhance your students’ classroom experience? Come join us, as we walk you through using an assessment about the Greenhouse Effect to capitalize on designing station labs, from the end to the beginning!"

Target Audience: Life Sciences, Earth and Space Sciences. General Science: Intermediate (6-8), High School (9-12)

Z-10: Active Physics and NGSS: A Focus on the "E" in STEM Activate Learning
The workshop will feature the “E” in STEM & show how engineering can be assimilated in any curricula via Jenny Daugherty’s work with the NRC on Engineering Systems and rooted in Active Physics & NGSS.