

Schedule of Programs – Tuesday October 19, 2021

Key: **I/G** (Integrated/General Science), **B/LS** (Biology/Life Science), **C** (Chemistry), **E/SS** (Earth/Space Science), **ENV** (Environmental Science), **P/PS** (Physics/Physical Science), **SL/SUP** (Science Leaders/Supervision), **T** (Technology), **Climate/NJ** (Climate Change: Impacts in New Jersey), **Climate/Society** (Climate Change: Impact on Human Society), **Equity/Access** (Equity and Access to Science Education), **3D Assessment** (Constructing Assessment Tasks That Provide Evidence of 3D Science Learning)

08:30 AM-09:30 AM

001 8-12 Climate/NJ, Climate/Society Hands-On Carnahan

Understanding the Science of How Climate Change is Impacting New Jersey

We will take a close look at how the American Geoscience Institute tackles the subject of climate change and its impact on all our systems and making the connection between their activities and New Jersey.

Presenter(s): Gary Curts

08:30 AM-09:30 AM

002 K-8 Climate/Society, Climate/NJ Hands-On Dod

Marine Science, Climate Change, and the NGSS

We will present strategies for implementing marine science and climate change across the K-8 spectrum.

Presenter(s): Lauren Madden, TCNJ (others TBA)

08:30 AM-09:30 AM

003 3-8 T, I/G Demo Fitzgerald

The Possibilities of Padlet When Designing Engaging Science Lessons in NGSS Grades 3-8

Today we will explore engaging strategies using photo, video, and the Padlet platform to design lessons that increase critical thinking and student engagement for students who are in the classroom or are remote.

Presenter(s): Jonathan Nolde Campbell Elementary School, Metuchen, NJ

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08:30 AM-09:30 AM

004 9-12 B/LS, C Presentation/Lecture Henry

Creating an Integrated Biology and Chemistry Core Sequence

We teach a two-year Integrated Biology and Chemistry curriculum. Learn how we turned it into an activity-based course that incorporates current science topics along with skills, core knowledge and equity-awareness.

Presenter(s): Jessica Leiken, Dwight-Englewood School; Brett Moreland, Dwight-Englewood School; Helen Stott, Rutgers University

08:30 AM-09:30 AM

005 6-12 ENV, B/LS Hands-On Lowrie

The TerrAqua Column Experiment ~ An Inductive Approach to Learning

TerrAqua Column construction involves soda bottles, soil, water, and lawn seed. This inductive activity allows students to search for patterns and identify water - land relationships through data collection.

Presenter(s): Marcella Dow, BTMF Paterson

08:30 AM-09:30 AM

006 6-8 3D Assessment, NGSS/NJSLS-S Discussion Maclean

Planning 3D Assessment of Student Growth in Science Learning

Planning for 3D science learning includes assessments that are embedded, ongoing, and growth oriented. Develop a plan for collecting authentic evidence of student learning.

Presenter(s): Loris Chen, Retired

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08:30 AM-09:30 AM

007 9-12 B/LS, ENV Hands-On Mercer

Using Molecular Tools to identify Antibiotic Resistant Genes in Environmental DNA (eDNA)

Join a national monitoring program tracking the spread of antibiotic resistance in the environment. Choose locations, collect soil, and probe for genetic signatures of common antibiotic resistance genes using PCR.

Presenter(s): Bruce Bryan, miniPCRbio

08:30 AM-09:30 AM

008 3-12 P/PS, T Presentation/Lecture Nassau 24

Tricked into Thinking...

Finding ways to engage students and make them think is closer than you think!

Presenter(s): Thom OBrien, Explore Learning

08:30 AM-09:30 AM

009 1-12 B/LS, C Presentation/Lecture Rush

StreamWatch Schools

The Watershed Institute is launching StreamWatch Schools, a partnership with classrooms to collect, analyze, and share water data from your stream through a map-based platform. Learn how to participate.

Presenter(s): Dr. Steve Tuorto, Watershed Institute; Jeff Hoagland, Watershed Institute

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010 6-12 E/SS, P/PS Presentation/Lecture Wilson

Argument-Driven Inquiry in the Life, Physical, and Earth-Space Sciences

Learn about Argument-Driven Inquiry and how it can help students learn how to use DCIs, CCs, and SEPs to explain natural phenomena.

Presenter(s): Victor Sampson, University of Texas; Chris Crouch

08:30 AM-09:30 AM

011 9-12 B/LS Hands-On Witherspoon

Utilization of Student Created 3D Models in Biological Sciences

Student generated biological 3D models provide a hands-on learning experience that incorporates multiple skills ranging from development, designing, building, and powering (where applicable) the final product.

Presenter(s): Erin Todd, Tracee Panetti

08:30 AM-10:00 AM

012 3-12 NGSS/NJSLS-S, Equity/Access Hands-On Bainbridge

Teach Data Better in Science: Unpack “Analyze & Interpret”

Join us to unpack “Analyzing & Interpreting Data”. We will leverage perception sciences to our advantage, consider data visualizations differently, and adapt existing curriculum to better build data skills.

Presenter(s): Kristin Hunter-Thomson, Dataspire Education & Evaluation, LLC

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013 3-12 Climate/Society, STEM/STEAM Demo Nassau 25

GLOBE Mission Earth: Fusing GLOBE with NASA Assets to Investigate Climate Change

Using assets from NASA and the GLOBE Community, multiple resources will be introduced to investigate Climate Change that include a Weather Curriculum from UCAR, MYNASA Data, and GLOBE Observer and Satellites.

Presenter(s): John Moore

10:00 AM-11:00 AM

~~015 9-12 C, Climate/Society Hands-On Dod~~

~~Students Solve the STEM Case: Analyzing Ocean Carbon Equilibrium IRL~~

~~Mussel shells in the Arctic Ocean are eroding and becoming more brittle. Jump into the role of a marine chemist to analyze the changes to determine the cause and understand the human impact.~~

~~**Presenter(s):** Jenna Mercury, ExploreLearning~~

10:00 AM-11:00 AM

016 6-12 Climate/NJ, Climate/Society Presentation/Lecture Fitzgerald

Climate Change and Environmental Justice for Grades 6-12

Love teaching 6-12 climate? Hate it? Stop by either way and we'll share good ideas for MS on up through APES!

Presenter(s): Christopher Duvall, Appoquinimink High School ; Steven Sygowski, Appoquinimink High School

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10:00 AM-11:00 AM

017	K-5	Climate/NJ, Climate/Society	Presentation/Lecture	Lowrie
2020 New Jersey Student Learning Standards and their Effect on Climate Change Education K - 5				
NJ is the first state to adopt standards related to climate change across content areas. This workshop introduces participants to the 2020 NJSLS, climate change education, and resources for K-5 curriculum revisions.				
Presenter(s): Michael Heinz, NJDOE				

10:00 AM-11:00 AM

018	4-8	NGSS/NJSLS-S	Hands-On	Maclean
Using Phenomenon to Anchor a Lesson				
In this popular workshop, you will learn how to: 1. find gripping phenomenon 2. implement a hands-on discovery activity and 3. apply the students' gained knowledge. Come away with free lessons & resources.				
Presenter(s): Lissa Johnson, Mosa Mack Science				

10:00 AM-11:00 AM

019	9-12	B/LS	Hands-On	Mercer
Visualize Transcription and Translation in Real-time Using Hands-on Tools from BioBits®				
Use the cell-free BioBits® system to authentically demonstrate molecular biology concepts. Watch as DNA is transcribed to RNA and RNA is translated to protein using low cost tools designed for the classroom.				
Presenter(s): Bruce Bryan, miniPCR bio				

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020 11-12 Equity/Access, STEM/STEAM Presentation/Lecture Nassau 24

Initiatives to Find the Lost Einsteins - The Integration of Independent Scientific Research Projects

STEM education as a civil rights issue. The lack of access to STEM basics in underserved communities is an example. This presentation will showcase new academic routes to tackle these challenges.

Presenter(s): Maria Agapito, Ph.D. Bard HS Early College - Newark, NJ

10:00 AM-11:30 AM

014 5-12 B/LS, Technology Hands-On Carnahan

Equity and Engagement in Science

With over 10 years of experience teaching science to a diverse population of learners, I will share with you the most successful practices & tools for engaging all styles of learners (AP, Honors, ESL, special Ed)

Presenter(s): Lisa Wallin-Geiss, Keyport High School

10:00 AM-11:30 AM

021 K-12 NGSS/NJSLS-S, Equity/Access Discussion Henry

Sensemaking and Productive Talk

Learn to lead discussions where your students: clarify their thinking, listen to one another, deepen their reasoning, and engage with the reasoning of others.

Presenter(s): Jennifer Tan, Cherry Hill High School West; Lauren Pasanek, Haddonfield Memorial Middle School; Scott Goldthorp, Cherry Hill Public Schools

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022 9-12 B/LS, NGSS/NJSLS-S Discussion Rush

Using Inquiry to Investigate Misconceptions about COVID-19 Vaccines

Misconceptions about COVID-19 vaccines appear regularly in media. How can we use science to investigate how the vaccines really work? Participants will leave with a sample lesson sequence and resources.

Presenter(s): Haley Mangieri, West Windsor-Plainsboro High School North; Stefanie Ribecca, Hopewell Valley Central High School

10:00 AM-11:30 AM

~~023 K-12 Climate/NJ, Climate/Society Panel Witherspoon~~

~~Addressing Climate Change Student Learning Standards~~

~~This session will focus on how to address the NJ Student Learning Standards (across content areas) through local, place-based climate change activities that emphasize systems thinking and climate justice.~~

~~**Presenter(s):** Janice McDonnell, Rutgers University~~

10:30 AM-11:30 AM

024 6-8 ENV, Climate/Society Presentation/Lecture Nassau 25

Sustainability Challenge - Build a Better School

Visit the LEED-Platinum certified Watershed Center, discovering an array of features that decrease environmental impact. Students then embark on a design challenge to decrease the impact of their school.

Presenter(s): Jeff Hoagland, Watershed Institute

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025 9-12 Chemistry Presentation/Lecture Wilson

Integrating Technology Into the Secondary Classroom

We will look at different ways to incorporate varying technology tools like websites, apps, and simulations into teaching and learning in the secondary classroom (Chemistry) to correspond with NGSS/NJSLS.

Presenter(s): Iris Pierri and Monica Weisberg, Glen Rock High School

10:30 AM-12:00 PM

026 K-8 Climate/Society, B/LS Hands-On Bainbridge

Discover the Ocean as an Aquanaut with the Fabien Cousteau Ocean Learning Center (FCOLC)!

Explore the FCOLC's Ocean Discovery Educational Packs and learn how to engage learners as aquanauts. Grow an awareness through inquiry and wonder around ocean conservation, climate change, and how kids can help.

Presenter(s): Dr. Kenneth Kunz; Maureen Hall

11:30 AM-12:30 PM

027 K-6 I/G Hands-On Dod

Reading, Writing, Talking, and DOING 3-dimensional Science: Literacy Strategies for K-6 Classrooms

Explore 3-D science/literacy connections using a lesson that incorporates academic language in written responses, oral discourse, and reading in conjunction with active investigation and modeling using a word wall.

Presenter(s): Ellen Mintz

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11:30 AM-12:30 PM

028 1-12 B/LS, C Presentation/Lecture Fitzgerald

Blending Biochemistry Into K-12 Science: Modeling the Nano-Biosphere

Biochemistry connects the physical and biological sciences, but is not emphasized in school curriculum. Modeling-based biochemistry lessons can make these challenging concepts clear and fun for students of any age.

Presenter(s): Dr. Daniel Fried, Pingry School; Dr. Grace Sanvitores, Hudson Montessori School; Michelle Velho, Hudson Montessori School

11:30 AM-12:30 PM

029 8-12 Forensics, B/LS Presentation/Lecture Lowrie

Forensic Science: Inexpensive, Engaging, Fun Demos, Models and Activities

Easy-to-understand and visualize blood spatter analysis; structure: DNA, introns, exons; STRs personal-ID activity; Glass analysis: Density, Refractive index, glass fractures. Free handouts, activities.

Presenter(s): Anthony (Bud) Bertino, retired; Patricia Nolan Bertino, retired

11:30 AM-12:30 PM

030 K-2 NGSS/NJSLS-S, STEM/STEAM Hands-On Maclean

3D Printing for a 1st Grade Audience

Explore how you can guide your students through creating 3D printed solutions to a human problem. We will discuss how we guided a 1st grade class through animal adaptations and the idea of biomimicry.

Presenter(s): Kengo Yamada, Liberty Science Center

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11:30 AM-12:30 PM

031 6-12 B/LS, E/SS Hands-On Mercer

Designing DNA analysis experiments with the Genes in Space contest

Through Genes in Space, students collaborate to design biology experiments for the International Space Station (ISS). Harness this opportunity to teach science & engineering practices in a real-world context.

Presenter(s): Katy Martin, Genes in Space

11:30 AM-01:00 PM

032 11-12 Equity/Access, STEM/STEAM Presentation/Lecture Nassau 24

Innovations to Tackle the STEM Gap in Underserved Communities

STEM education as a civil rights issue. The lack of access to STEM basics in underserved communities is an example. This presentation will showcase new academic routes to tackle these challenges.

Presenter(s): Maria Agapito, PH.D. Bard HS Early College - Newark, NJ

12:00 PM-01:00 PM

033 6-8 I/G, NGSS/NJSLS-S Hands-On Carnahan

Surprises, Investigations, and Collaborations With Simple Materials

Participants will collaborate to make observations, propose theories, and develop lines of investigation using a few sheets of newsprint.

Presenter(s): Mark Schlawin (retired from Princeton Charter School)

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12:00 PM-01:00 PM

034 6-8 I/G, P/PS Discussion Henry

Then and Now 1

This roundtable discussion shows how the 2021 Maitland P Simmons Awards Committee Scholars have transformed their own lessons to incorporate the OpenSciEd Curricula.

Presenter(s): Christine Lijoi; Cheryl Zanone; 2021 Maitland P Simmons Memorial Award Summer Institute Participants

12:00 PM-01:00 PM

035 6-9 STEM/STEAM, Climate/Society Demo Nassau 25

Building Data Skills through Polar Science

This program is for students in grades 6-9 to explore and communicate about data using the polar regions as a learning laboratory. The program includes a creative science communication project called a Data Jam.

Presenter(s): Janice McDonnell, Rutgers University; Liesl Hotaling, Eidos Education

12:00 PM-01:00 PM

036 1-12 T Presentation/Lecture Rush

Google Tips and Tricks for Science Teachers

This presentation will guide you through several resources that can be integrated into your general education or special education classes, exploring areas beyond the classroom for in class or distance learning.

Presenter(s): Barry Schwartz Benway School

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12:00 PM-01:00 PM

037 6-12 Climate/NJ, Climate/Society Discussion Wilson

How Might Climate Change Affect Your Community?

Explore resources for engaging students in local climate change research. Develop a plan for empowering students to take local action. WiFi enabled device recommended.

Presenter(s): Loris Chen, Retired

12:00 PM-01:30 PM

038 6-12 B/LS, Climate/Society Hands-On Witherspoon

Starla's Hands-On Body Systems: Digestion and Nutrients

Instructors will build the components of digestion. This affordable, fun, successful lesson helps students to understand the power of how nutrients impact health and how the climate determines those levels.

Presenter(s): Starla Ewan, Lubbock TX

12:30 PM-01:30 PM

039 6-12 Climate/Society, E/SS Hands-On Bainbridge

Atmosphere, Climate, and Global Warming

Use data spanning the past 100 years to understand the causes of current global warming. Analyze the data to figure out how human activities relate to global warming.

Presenter(s): Stephanie Brunnett, Lab-Aids

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01:00 PM-02:00 PM

040 8-12 3D Assessment, P/PS Hands-On Dod

Applying Mathematics in Science Inquiry to Deepen Understanding of Scientific Phenomena

Per new science standards, in Inq-ITS students use mathematical representations to model real science phenomena and make predictions; Inq-ITS both auto-scores and remediates students on these practices in real time.

Presenter(s): Janice Gobert, Rutgers University

01:00 PM-02:00 PM

041 K-12 STEM/STEAM, SL/SUP Discussion Fitzgerald

Presidential Awards for Excellence in Mathematics and Science Teaching

The Presidential Awards for Excellence in Mathematics and Science Teaching is the highest honor bestowed by the US government specifically for K-12 teachers of STEM discipline related classes. Learn how to apply!

Presenter(s): John D. Moore, NJ PAEMST State Coordinator

01:00 PM-02:00 PM

042 6-12 Climate/NJ, Climate/Society Presentation/Lecture Lowrie

2020 New Jersey Student Learning Standards and their Effect on Climate Change Education 6-12

NJ is the first state to adopt standards related to climate change across content areas. This workshop introduces participants to the 2020 NJSLS, and climate change resources to support 6-12 curriculum revisions.

Presenter(s): Michael Heinz, NJDOE

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01:00 PM-02:00 PM

043 6-12 I/G, Equity/Access Discussion Maclean

OpenSciEd Professional Learning Community

Have you taught an OpenSciEd unit or will you be in the future? Join our PLC to collaborate with teachers from across the state, we can't wait to learn with and from you!

Presenter(s): Jennifer Tan, Cherry Hill High School West; Lauren Pasanek, Haddonfield Memorial Middle School; Scott Goldthorp, Cherry Hill Public Schools

01:00 PM-02:00 PM

044 7-12 B/LS Hands-On Mercer

Viral Diagnostics Lab: Explore the Tools and Techniques Behind COVID Testing

Use this case-based lab to teach how molecular biology tools help us manage disease outbreaks. Students will use gel electrophoresis to diagnose patients with seasonal flu or a new and dangerous emerging virus.

Presenter(s): Bruce Bryan, miniPCRbio

01:30 AM-02:30 PM

045 9-12 B/LS, STEM/STEAM Hands-On Carnahan

Proteins: The Star of the Show

Participants will interact with hands-on modeling activities to investigate how proteins fold and easy ways to connect back to the central dogma. DNA might be the king, but proteins are the star of the show!

Presenter(s): Diane Sigalas, Livingston High School

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01:30 PM-02:30 PM

046 6-12 Climate/Society, ENV Presentation/Lecture Henry

Project-based Climate Change High School Lesson Plans

A collection of project-based learning lesson plans for high school science classroom. A focus on inquiry-driven, student-centered, activities that seek active engagement and authentic product-based assessments.

Presenter(s): Clare Ng, Marine Academy of Science and Technology

01:30 PM-02:30 PM

047 K-12 SL/SUP Discussion Nassau 24

So You Want to be a Science Supervisor?

This New Jersey Science Leadership Association program will offer insight and information regarding the process and challenges of becoming a science content area supervisor.

Presenter(s): Gavin Quinn, Moorestown Twp Public Schools; Kristen Crawford, School District of the Chathams

01:30 PM-02:30 PM

048 3-5 STEM/STEAM, NGSS/NJSLS-S Presentation/Lecture Wilson

How to Focus on Science and Literacy Skills in Grades 3-5 with Argument-Driven Inquiry

Learn about Argument-Driven Inquiry and how it can help elementary students engage in real-world science while using literacy practices in the service of sense-making.

Presenter(s): Victor Sampson, University of Texas; Chris Crouch

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01:30 PM-03:00 PM

049 6-12 NGSS/NJSLS-S, Equity/Access Discussion Rush

Teaching Science Through Issues to Increase Engagement, Meet the NGSS, and Prepare Citizens

Explore how teaching science through current societal issues increases student interest in science, meets the NGSS, and creates science-proficient citizens. Leave with an issue and planning tool for your class.

Presenter(s): Christopher Murphy, The College of New Jersey; Ammar Ahmed, Robbinsville High School

02:00 PM-03:00 PM

050 K-12 Equity/Access, SL/SUP Presentation/Lecture Bainbridge

Increasing Science Engagement Through Community Collaboration

A school district, community volunteers, and the broader science community collaborated to engage school and community members in science through a Nature Park, school and community gardens, and Citizen Science.

Presenter(s): Dr. Linda A. Cook, NSELA

02:00 PM-03:00 PM

051 9-12 ENV, 3D Assessment Presentation/Lecture Witherspoon

Applying Synthesis Skills in AP Environmental Science

Ever say, "Good start but vague/incomplete?" The APES Exam requires students to quickly synthesize data and readings. Discuss and share how to focus on synthesis!

Presenter(s): Christopher Duvall, Appoquinimink High School

Schedule of Programs – Tuesday October 19, 2021

Key: **I/G** (Integrated/General Science), **B/LS** (Biology/Life Science), **C** (Chemistry), **E/SS** (Earth/Space Science), **ENV** (Environmental Science), **P/PS** (Physics/Physical Science), **SL/SUP** (Science Leaders/Supervision), **T** (Technology), **Climate/NJ** (Climate Change: Impacts in New Jersey), **Climate/Society** (Climate Change: Impact on Human Society), **Equity/Access** (Equity and Access to Science Education), **3D Assessment** (Constructing Assessment Tasks That Provide Evidence of 3D Science Learning)

02:30 PM-03:30 PM

053 K-8 T, STEM/STEAM Hands-On Dod

Game On! Gamify Your Classroom and Student Learning

Race cars, launch cows into outer space and learn how Legends of Learning's K-8 NGSS aligned, phenomena based games give all students the opportunity to engage in learning. Most importantly, you could win a cape!

Presenter(s): Aryah Fradkin, Legends of Learning

02:30 PM-03:30 PM

054 5-8 I/G Presentation/Lecture Fitzgerald

Resource Center Teaching Strategies/With An Inclusion Twist

Successful teaching with an innovative style, an interdisciplinary curriculum along with details on how to organize and implement a successful enrichment program, while mainstreaming yourself and your students.

Presenter(s): Barry Schwartz Benway School

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02:30 PM-03:30 PM

055 6-12 Climate/Society, 3D Assessment Discussion Lowrie

Integrating Civic Competencies Into Science Learning: Features of a Climate Change Assessment Task.

Climate change is an ideal interdisciplinary topic. We will introduce a NGSS-based, climate change assessment task that highlights civic learning and discuss how teachers can use such assessments in the classroom.

Presenter(s): Dante Cisterna and Lei Liu, Educational Testing Services

02:30 PM-03:30 PM

056 2-12 SL/SUP, I/G Hands-On Maclean

Arachnophobia: The Most Dangerous and Most Unnecessary Fear

From accidents and incinerations with spiders, to "spider bites" without spiders, Arachnophobia is arguably the most underrated fear across the country. Our program discusses the dangers of this irrational fear.

Presenter(s): John Ilao, Arachno-Showbia

02:30 PM-03:30 PM

057 9-12 B/LS, ENV Hands-On Mercer

Conservation Genetics Lab: Discovering Lemur Diversity

Scientists may have rediscovered a species of lemur that was thought to be extinct. Analyze authentic field data, perform gel electrophoresis, and build phylogenetic trees to make the call.

Presenter(s): Bruce Bryan, miniPCRbio

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02:30 PM-03:30 PM

058	PreK-12	SL/SUP, Equity/Access	Presentation/Lecture	Nasau 25
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NJSTA Fall Membership Meeting

Come and meet the executive board of NJSTA and learn all the exciting ways in which NJSTA supports science educators in the state of New Jersey. All are welcome!

Presenter(s): Guida Faria, NJSTA President, Scotch Plains - Fanwood; Lynn Prosen, NJSTA President-Elect, Gill St. Bernard's School