STEM 360

Growing Opportunities in Changing Environments

SUMMER INSTITUTE

July 30 – August 1, 2023

Organized and Supported by the

NEW YORK STATE STEM EDUCATION COLLABORATIVE

AND ALFRED STATE COLLEGE OF TECHNOLOGY

ALFRED STATE COLLEGE OF TECHNOLOGY
STATE UNIVERSITY OF NEW YORK

Updated Conference Information and Schedule is found at the
NYS STEM Education Collaborative (NYSSEC) Website
www.nysstemeducation.org

Alfred State IT Hotline: 607-587-4357
Guest Wi-Fi access is available

New York State STEM Education Collaborative

www.nysstemeducation.org

Founding Core Members

Science Teachers Association of New York State (STANYS)

New York State Technology and Engineering Educators' Association (NYSTEEA)

New York State Technology Society of Professional Engineers (NYSSPE)

Association of Mathematics Teachers of New York State (AMTNYS)

Supporting Partner Members

Alfred State – SUNY College of Technology

American Society for Education Engineering

CNY STEM Hub

Chenango Forks STEAM

CTE|Technical Assistance Center of NY

Discovery Education

Eastern Southern Tier STEM HUB

Empire State STEM Learning Network

Finger Lakes STEM Hub

Greater Southern Tier STEM Education

Hofstra University Center for STEM Research

International Technology and Engineering Educators Association

Long Island STEM Hub

Maker State

NASA – Endeavor Science Teaching Certificate Project

NEATEC|Northeast Advanced Technological Education Center

NYSCATE|New York State Association for Computers and Technology in Education

New York State for Youth Success

NYSUT|New York State United Teachers

New York STEAM Girls Collaborative

North Country STEM Learning Network

Rochester Engineering Society

Small World Initiative

STEM Alliance of Larchmont-Mamaroneck

SUNY Broome

SUNY Fredonia

SUNY Maritime College

SUNY Oswego

Technology Alliance of Central New York

Teq

Western NY STEM Hub

NYS STEM Education Collaborative (NYSSEC)

Mission & Goals

Our Mission Statement: To define STEM and the STEM disciplines in a fashion that will serve as a model for New York State and throughout the nation.

AMTNYS, ASEE, NYSSPE, NYSTEEA and STANYS will work collectively and collaboratively to deliver STEM Education in the spirit and vision of the NYS MST Frameworks and Learning Standards. We must take this approach to skillfully and completely address the concerted state and national cry for STEM Literacy.

Our Overarching Goals:

- To transform the NYS MST Learning Standards into an effective and meaningful STEM Education Learning Standards delivery.
- To hold mutually supported annual NYS STEM Education Collaborative Summer Institute that will encourage and facilitate the sharing of successful and innovative classroom STEM practices by presenters representing AMTNYS, ASEE, NYSSPE, NYSTEEA, STANYS, and other education organizations.
- To carry forward our NYS STEM Education Collaborative foundational work with enlightening debate and constructive discussions through various means of communication and a (yet to be determined) conducive timeframe.
- To work together to ensure that accepted research and practice-based STEM principles are applied in the development of revised or new MST Standards.
- To mutually support, connect and strengthen science, technology, engineering, and math P-16 instruction. All three disciplines would still maintain their separate learning standards, integrity, scope and depth but would be delivered within a cross connected methodology.
- To influence support funding, school policy, teacher training and preparation methods, with our mutually envisioned STEM Education approach.
- To foster the modification of existing assessments, with changes in written language and references, to bring about STEM connections, without changing the primary purpose and thrust of each.

STEM 360 – Growing Opportunities in Changing Environments

2023 Summer Institute Planning Committee

Chuck Goodwin, DTE	NYSSEC Summer Institute **Co-Chairperson,** Trivia Coordinator, Session Co-Coordinator & Keynote Facilitator; NYSSEC Past-President, NYSTEEA Past President
Jeff Stevens	NYSSEC Co-President, Summer Institute **Co-Chairperson,** Tours Facilitator, Sponsor Facilitator & Keynote Facilitator; Dean, School of Applied Technology-Alfred State College
Dr. Joseph Zawicki	NYSSEC Co-President, NYSSEC Summer Institute **Co-Chairperson,** Presentation Session Co-Coordinator; WNY STEM Hub, Professor-Buffalo State University; STANYS
Brian Bealer	NYSSEC Treasurer; STANYS representative
Dr. Craig Clark, PE	NYSSEC Sponsor Facilitator; Vice President of Economic Development & Interim Vice President of Academic Affairs-Alfred State College
Karin Dykeman	NYSSEC Plenary Facilitator & Margaret Ashida Awards Committee; Assistant Professor-SUNY Oswego
Barry Fried	STEM Alliance representative
Lorena Harris, PhD	NYSSEC Margaret Ashida Awards Committee; CSTEP + LSAMP Director-SUNY Schenectady CCC
Melissa Hirt	NYS Master Teacher, NYSTEEA NE District
Howie Hollander	President Emeritus-Technology Alliance of Central NY
Jill Lansing, PhD	State University of New York and Empire State STEM Learning Network
John McDonald	External Event Planner & Director of Dining Services-Alfred State College
MaryAnn Nickloy	NYSSEC Vice-President, NYSSEC STEM Liaison for AMTNYS, Presentation Session Co-Coordinator, Plenary Facilitator, & CTLE Facilitator; NEATEC 7-12 Curriculum Developer-SUNY Polytechnic Institute; NYS Master Teacher
Phyllis O'Donnell, PhD	NYSSEC Event Program; Professor-SUNY Broome; STANYS
Christina Patterson	NYSUT Assistant in Research and Educational Services
Fred Pidgeon	NYSSEC Past Vice-President & Keynote Facilitator; STANYS Past President
Frank Roma, PE	NYSSEC Immediate-Past President & Presentation Session Co-Coordinator; NYSSPE
Ricardo Rowe	NYSSEC Webmaster
Lisa Shaffer	AMTNYS representative
Anchala Sobrin, EdD	Director of STEM-Peekskill City School District
Dr. Mark Vaughn	Manager, Technical Talent Pipelining & Lead, Office of STEM-Corning Incorporated; Greater Southern Tier STEM Learning Network
Marie Wicks	NYSSEC Vendor Co-Facilitator, Presentation Session Co-Coordinator & NYSSEC Social Media Coordinator; STEM Discovery Lab Specialist, K-6, Franklin Square UFSD (retired); STANYS, NSTA, NSF grant recipient for Mechanismic. Inc.
Bill Youngfert	NYSSEC Vendors Co-Coordinator; Past President of NYSTEEA

The 2023 STEM Institute Support and Planning Team at Alfred State College

We Thank & Support our Sponsors

Silver Sponsors

nysut A Union of Professionals

CORNING

Bronze Sponsor

AGC NEW YORK STATE ASSOCIATED GENERAL CONTRACTORS NEW YORK STATE

We Thank & Support Our Vendors

STEM NEW YORK STATE EDUCATION COLLABORATIVE

ALFRED STATE COLLEGE OF TECHNOLOGY STATE UNIVERSITY OF NEW YORK

nysut A Union of Professionals

CORNING

ITEEA

FIRST IN MATH® Energizing Every Child to Learn, Love and Live Math®

STEMscopes™ THE LEADER IN STEM EDUCATION

G-W PUBLISHER

SnappyXO™

BOCES 4 Science

Tech-Ed Systems

New York State STEM Education Collaborative

Growing Opportunities in Changing Environments

2023 Summer Institute

July 2023

Dear Colleagues in STEM,

We are absolutely thrilled to welcome you to the 2023 Summer Institute! We are delighted to be back at SUNY Alfred to renew old acquaintances, meet new colleagues, interact with engaging speakers and presenters, and hear about updates in the world of STEM. While the worldwide pandemic precluded recent institutes, the need for STEM Education has never been stronger. This is the first in-person institute since 2019 and it is wonderful to be back!

This year's programs include an impressive list of keynote speakers – all leaders at the forefront of STEM. Our plenary panel includes well-known experts in each of the individual STEM disciplines. Our sessions include thirty-five hours of presentations focusing on STEM disciplines, as well as English Language Arts and the Arts, at the elementary, intermediate, and senior levels. There are well over twenty posters addressing a range of topics, from mathematical modeling, coding, authentic engagement, drones, and equity to student posters speaking to climate change. Three individuals will be recognized with Margaret Ashida awards. STEM-focused tours and vendor displays, as well as icebreakers and a STEM trivia competition, will round out our events.

We owe a special thank you to the speakers and presenters for making this event happen. Sponsors have been invaluable in supporting the institute and keeping down participant costs. We would be remiss if we did not recognize the tireless work of our planning committee. Finally, we are most appreciative of you, our participants. Our sincere gratitude to all who have helped to make this event a rousing success!

Sincerely,

Jeffrey Stevens

Joseph Zawicki

Co-Presidents of the New York State STEM Education Collaborative, Inc.

www.nysstemeducation.org

ALFRED STATE COLLEGE
STATE UNIVERSITY OF NEW YORK

Office of the President
10 Upper College Drive
Alfred, NY 14802
Ph: 607-587-4010
Fax: 607-587-4209
presidentsoffice@alfredstate.edu

June 5, 2023

Welcome Participants,

Alfred State is pleased to once again host, the NYS STEM Summer Institute.

At Alfred State, we have a wide variety of STEM-related programs, from the skilled trades on the Wellsville campus to engineering technology, health sciences, agriculture, architecture, management and many more on the Alfred campus. Our commitment to STEM programming will continue to be at the core of who we are. As the new president of Alfred State, you may not know that Biology is my background, so STEM is very near and dear to me personally as well.

The College is proud of its focus on educating students for 21st century STEM workforce careers and realizes the benefits of science technology, engineering, and math and the impacts these fields have on our lives every day. Additionally, our interest in non-traditional students in the STEM Workforce will continue to be a focus through our growing partnerships with area industry leaders to train their current workforces close to home.

This conference is a great professional development opportunity that includes networking from the elementary level through higher education and beyond. Fittingly, this year's theme is "STEM 360 - Growing Opportunities in Changing Environments", which correlates with the changes we are seeing nationally in higher education and employment trends spotlighting the need for STEM education. We strive to inspire future technicians, engineers, scientists, and mathematicians, no matter their age.

The ability for New York State to support existing and new companies is based on the ability to educate students at all levels in STEM careers. Alfred State commends the NYS STEM Education Collaborative on continuing to put STEM initiatives at the forefront of PK-20 educators minds and realizes the importance of its mission. We are honored that you have again chosen to be at Alfred State in Western New York, and hope you consider this your home for this annual conference.

Please enjoy yourselves and learn from the stimulating and inspiring sessions, and one another. These conversations will allow us to continue serving our students and changing lives in these important fields of study.

Have a wonderful conference!

Steve Mauro

Dr. Steve Mauro
President

GREATER CAPITAL REGION TEACHER CENTER FOR EFFECTIVE TEACHING

nysut A Union of Professionals

New York State Sponsors of Continuing Teacher and Leader Education (CTLE)

To register for the CTLE credit, please visit: https://tinyurl.com/3cx78m7c

VENDOR TABLING
Sunday at 4:45 PM
Monday at 9 AM, 10:45 AM, 2:15 PM, & 4:30 PM
Tuesday at 9 AM & 10:45 AM
CDH: STUDENT GATHERING SPACE

Don't forget to fill out **VENDOR CONTACT FORMs** to be eligible for RAFFLE prizes.
Raffle drawing on Tuesday at lunch.

STEM NEW YORK STATE EDUCATION COLLABORATIVE

TRIVIA

STEM Trivia - Have Fun & Learn (2 PD)
Sunday during Brewery Tour at Kent Beer (6:00 – 9:00 PM) – *Preregistration required* -
A bus will loop the campus and pick up registered participants at the various campus bus stops. The loop starts at Shults Hall at 5:45 PM and ends at the stoplight bus stop.

STEM 360 – Growing Opportunities in Changing Environments

2023 Summer Institute - Schedule

Building KEY

PHS Physical & Health Sciences Building • **SLC** Student Leadership Center
CDH Central Dining Hall/**SGS** Student Gathering Space

Sunday, July 30, 2023	12 NOON Vendor Area opens for Vendor set-up	
	12:00 PM to 5:00 PM, Registration ◦ **SLC 3rd floor**	
	1:00 PM to 2:30 PM, **Tour Session 1-A** (1.5 PD) Clean Room Tour. *Preregistration required.* **OR** 1:00 PM to 2:30 PM, **Tour Session 1-B** (1.5 PD) Robotic Milking Tour. *Preregistration required.*	Please gather 10 minutes before tour time.
	3:00 PM to 4:30 PM, **Tour Session 2-C** (1.5 PD) Microgrid Tour. *Preregistration required.* **OR** 3:00 PM to 4:30 PM, **Tour Session 2-D** (1.5 PD) Nursing Simulation Lab Tour. *Preregistration required.*	
	4:45 PM to 5:45 PM, Institute Introductions, Dinner, Networking & Vendor Exhibits ◦ **CDH** & **SGS**	
	6:00 PM to 9:00 PM, **Tour Session 3-E** (2 PD) Kent Beer Brewery Tour + **STEM Trivia**. *Preregistration required.*	
Monday, July 31, 2023	6:30 AM to 7:45 AM, Breakfast ◦ **CDH**	
	7:00 AM to 9:00 AM, Registration & Check-in ◦ **SLC 3rd floor**	
	8:00 AM to 9:00 AM, **Plenary Session** - Moderator **Ms. Karin Dykeman** (1 PD) ◦ **CDH**	
	9:00 AM to 9:45 AM, Vendors, Networking and Break ◦ **CDH** & **SGS**	
	9:45 AM to 10:45 AM, **Session 1 Presentations** (1 PD) ◦ **PHS**	
	10:45 AM to 11:15 AM, Vendors, Networking and Break ◦ **CDH** & **SGS**	
	11:15 AM to 12:15 PM, **Keynote Address** - **Dr. Marion Terenzio** (1PD) ◦ **CDH**	
	12:15 PM to 1:00 PM, Lunch ◦ **CDH**	
	1:15 PM to 2:15 PM, **Session 2 Presentations** (1 PD) ◦ **PHS**	
	2:15 PM to 3:00 PM, Vendors, Networking and Break ◦ **CDH** & **SGS**	
	3:00 PM to 4:00 PM, **Session 3 Presentations** (1 PD) ◦ **PHS**	
	4:00 PM to 4:30 PM, Break	
	4:30 PM to 6:00 PM, **Poster Session** (1 PD), Networking, Vendors and Cash Bar ◦ **CDH** & **SGS**	
	6:00 PM to 7:00 PM, Dinner ◦ **CDH**	
	7:00 PM to 8:30 PM, **Ashida Awards** and **Keynote Address** - **Dr. Oliver Robinson** (1 PD) ◦ **CDH**	
Tues, August 1, 2023	6:30 AM to 7:45 AM, Breakfast ◦ **CDH**	
	7:00 AM to 8:00 AM, Registration ◦ **SLC 3rd floor**	
	8:00 AM to 9:00 AM, **Session 4 Presentations** (1 PD) ◦ **PHS**	
	9:00 AM to 9:45 AM, Vendors, Networking and Break ◦ **CDH** & **SGS**	
	9:45 AM to 10:45 AM, **Session 5 Presentations** (1 PD) ◦ **PHS**	
	10:45 AM to 11:00 AM, Vendors and Break ◦ **CDH** & **SGS**	
	11:00 AM to 12 NOON, **Session 6 Presentations** (1 PD) ◦ **PHS**	
	12:00 PM, Lunch, **Raffle**, and **Keynote Address** - **Mr. Bob Bechtold** (1 PD) ◦ **CDH**	

Professional Development Hours (CTLE Approved Credits)

Sunday (5) ● Monday (7) ● Tuesday (4)

STEM Institute Total Professional Development 16 hours

NYSSEC 2023 Summer Institute
Keynoters

Dr. Marion Terenzio

President - SUNY Cobleskill

Monday, 11:15 AM (1 PD) - **CENTRAL DINING HALL**

Dr. Marion Terenzio is the 12th president of the SUNY College of Agriculture and Technology at Cobleskill. She has presented at numerous venues, including the United Nations, on the role of effective higher education practices in community well-being and economic revitalization and sustainability. Dr. Terenzio created the *Institute for Rural Vitality at SUNY Cobleskill*; a model program that has been supported by the US Department of Agriculture, receiving national attention for its unique approach connecting higher education to economic development, community well-being and sustainability.

The Green Horizon of STEM - From climate change to world population growth, our efforts in addressing some of the most urgent issues facing our society necessitate a new approach; a consciously crafted interdisciplinary coalition of scientists, policymakers, farmers, and innovators from Agriculture and the STEM fields. The need for such an approach is most evident in the escalation of food insecurity and the increased degradation of agronomic systems worldwide. This keynote will address the critical importance of Agriculture informing the STEM fields and building upon and transforming agronomic, ecological, and biodiverse practices and outcomes. The address will conclude with a call to action that includes early exposure to STEM through agriculture-related topics starting in primary education.

Dr. L. Oliver Robinson

Superintendent – Shenendehowa Central School District

Monday, 7 PM (1 PD) - **CENTRAL DINING HALL**

Dr. L. Oliver Robinson serves as the Superintendent of Schools for the Shenendehowa Central School District since July of 2005. He has also served as the Superintendent for the Mohonasen CSD from 2001-2005, making him one of the longest serving superintendents in New York. His recognition as the *2013 New York Superintendent of the Year* speaks to his keen leadership. He is the author of *Naked in the Public Eye - Leading and Learning in an Era of Accountability*, and a contributing author to *STEM Century: It Takes a Village to Raise a 21st Century Graduate.* He also serves as an adjunct professor at the Sage Graduate School in the Department of Educational Leadership, and the College of St. Rose in the School District Business Leader (SDBL) certificate program. Dr. Robinson received his Bachelor of Arts from Brown University, and a Master's and Doctor of Philosophy degree (Ph.D.) from the University at Albany.

Leaders for Learning: Managing Ambiguity in the Pursuit of Equity in Opportunities and Outcomes - Leadership is about managing ambiguity. Consequently, it is paramount to avoid the pitfall of binary thinking when facilitating intentional interruption to foster agency, engage in productive struggle, and ultimately broaden the cognitive horizon of those whose lives we impact. The transforming and transcending power of education serves to provide unbridled opportunities in which the credibility of our students as learners is never

questioned. Consequently the mission, vision, goals, and even lesson plans of teachers should include a dream plan for every child—a declaration of the commitment of leaders for learning to position each student for prosperity.
Students are all dreamers, and it is the responsibility of leaders to instill in them the notion to always dream big dreams and strive for extraordinary successes. Students must be reminded every day that as long as their dreams are bigger than their circumstances, they cannot fail, and to fail does not make one a failure. That is why leaders for learning, those who chose to serve children and foster communities of learning, must be stalwart in the commitment to have a resounding and positive impact.
As leaders for learning, the role is to help students expand their circumstances to fit their big dreams, to be difference makers. The point should be punctuated that leaders for learning must live each day with a strident sense of purpose, knowing that the realization of the dreams of each and every student is indeed an intentional act. Such a commitment of conviction is particularly vital now in an environment marked by constant technological advancements and increased globalization. Increasingly, leaders are functioning in uncharted waters, facing unprecedented challenges, and relied upon to acutely manage ambiguity.

Mr. Bob Bechtold

President - HARBEC, Inc.

Tuesday, 12 noon (1 PD) - **CENTRAL DINING HALL**

Technical Innovation with Environmental Responsibility

Bob Bechtold is the president and founder of Harbec, Inc., a progressive injection molding company located in upstate New York, which provides a full service of model making, precision mold making, and complex precision plastic injection molding. His company believes strongly in the value of Eco-Economics and during the past decade he has developed an energy management strategy that includes a cogeneration project which currently provides a portion of their electricity, heat, and air-conditioning requirements, in conjunction with two on-site wind turbines. During the past 15 years, Harbec has attained ISO 9001 certifications for quality control and assurance, and ISO 14000 certification to demonstrate environmental responsibility. Currently, Harbec is focused on quantifying its Carbon Footprint with the help of the EPA's Climate Leaders Program, DOE's Better Buildings - Better Plants Challenge Partner level, and ISO 50001/SEP Platinum certification. They attained Carbon Neutrality in 2013 and Water Neutrality in 2015.
In 2002, Harbec was awarded the EPA Energy Star for Small Business, in 2003 it received the Society of Plastic Engineers' Environmental Stewardship Award, in 2004 the EPA/DOE Green Power Leadership Award, in 2006 NYS Water Environment Assoc. presented to Harbec their Industrial Pollution Prevention Award, and in 2007 they received the NY State Industrial Achievement Award from NYWEA. In 2011 the National Institute for Standards and Technology (NIST) awarded Harbec the National Award for Innovation in Sustainable Manufacturing and in 2012 they received the Manufacturing Leadership Award for Sustainability. The NY State DEC awarded Harbec the 2014 NYS Environmental Excellence Award.
Bob Bechtold will discuss how he integrated the technologies listed in this BIO into corporations and achieved a benchmark in renewable status operating a factory

Empire State STEM Learning Network

http://www.nysstemeducation.org/empire-state-stem-learning-network/

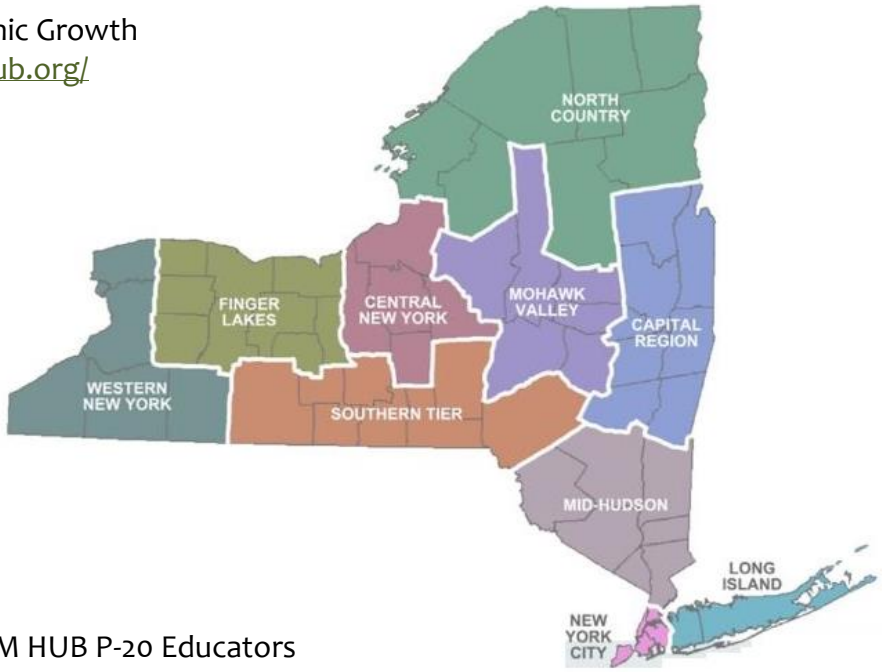
The Empire State STEM Learning Network is a statewide, community-led collaborative. The Network's mission is to advance STEM education to prepare all students for success in school, work, and life to fuel innovation and economic vitality in the Empire State. The Network is made up of 10 regional councils across the state. These Regional Councils include the following groups:

Capital Region
- Capital Region Center for Economic Growth
- https://www.capitalregionstemhub.org/

Central New York
- CNY STEM Hub
- https://cnystem.com/

Finger Lakes
- Finger Lakes STEM Hub
- https://flxstem.org/

Long Island
- Long Island STEM Hub
- https://www.listemhub.org/



Mid-Hudson
- Lower Hudson Valley Region STEM HUB P-20 Educators

Mohawk Valley
- Mohawk Valley BOCES
- https://www.moboces.org/

New York City

North Country
- North Country STEM Hub
- https://www.northcountrystem.org/

Southern Tier
- Greater Southern Tier BOCES Science / STEM Resource Center
- https://stem.gstboces.org/index.cfm
- Eastern Southern Tier STEM Hub
- https://eststem.com/

Western New York
- WNY STEM Hub
- https://www.wnystem.org/

NYSSEC 2023 Summer Institute

Margaret Ashida STEM Leadership Award Presentation

Monday, 7 PM – CENTRAL DINING HALL

To honor the memory of Margaret Ashida, the New York State STEM Education Collaborative will honor STEM Leaders in one or more of the following areas: preK-12/Higher Ed/STEM Workforce each year with a "Margaret Ashida STEM Leadership Award." Margaret was an outstanding woman who created waves of change by her tireless efforts to create connections between business/industry and STEM educational leaders in colleges and the K-12 sector, not only here in New York State, but across America! She was a "thought leader" often creating ideas and connections between and among educators and business/industry to further the implementation of pathways for developing America's STEM workforce. Through her advocacy, the NYS State STEM Hubs were created, pulling together New York communities in unique ways to foster the development of STEM career pathways. The Margaret Ashida STEM Leadership Award seeks to honor persons who are making significant STEM connections within their community through their time, actions, talents and dedication. The honorees selected serve as a role model for STEM Leadership as they are striving to enhance the STEM workforce through their connections between business/industry and STEM educational leaders.

The Mission of the Empire STEM Learning Network (STEM Hubs): to advance STEM education to prepare all students – regardless of their career goals – for college and career success, to fuel innovation and economic vitality in the Empire State.

Margaret was the Founding Chairperson for the Empire STEM Learning Network, a statewide, community-led collaborative; and a board member for the NYS STEM Education Collaborative (NYSSEC), a coalition of AMTNYS, NYSSPE, NYSTEEA, and STANYS. The Founding Members and Supporting Partner Members of the NYSSEC work collectively and collaboratively to deliver STEM Education in the spirit and vision of New York State's MST Frameworks and Learning Standards and to skillfully and completely address the concerted national cry for STEM Literacy. Margaret will be missed but forever remembered by her work ethic, her dedication to excellence and her friendship to all she met.

Thank you to the 2023 NYSSEC MASLA Committee:

Lorena Harris (harrislb@sunysccc.edu) *and Karin Dykeman* (karin.dykeman@oswego.edu)

Margaret Ashida - 2023
STEM Leadership Award Honorees

2023 Margaret Ashida STEM Leader, PreK-6 Education

Tracy Young

Elementary STEAM Specialist
ITEEA Engineering by Design Instructor for K-5
Benton Hall Academy Elementary School
Little Falls CSD

Ms. Tracy Young has been an exemplary teacher, a widely respected conference presenter, and leader in STEM-STEAM throughout her professional career. Her professional skills include integrated STEM best practices, curriculum development, modeling classroom management techniques, instructional team collaboration, and building relationships. Tracy is the STEAM Specialist at Benton Hall Academy in Little Falls, NY. Mrs. Young is the ITEEA Engineering by Design instructor for over 500 students in Kindergarten through fifth grade. She is the secretary of the ITEEA Elementary STEM Council as she has been since 2016. In that time, she has presented at the ITEEA National Conferences in Kansas City, Baltimore, Orlando and Minneapolis. Tracy also has presented at the 2022 and 2023 NYSTEEA Conferences as well as the Fall 2022 Technology conference at SUNY Oswego. She co-teaches an EBD class at Purdue University with Dr. Nathan Metzer. During the school year, Mrs. Young facilitates collaborative field work with Utica University students in person in her STEAM Lab as well as virtually as needed. Tracy received the NYSTEEA STEM Teacher of Excellence Award in 2022 and the ITEEA Mary Margaret Scobey Award. Benton Hall Academy received the ITEEA STEM School of Excellence award at ITEEA 2023.

\- - -

2023 Margaret Ashida STEM Leader, 7-12 Education

Gene Gordon

New York State NASA HUNCH Mentor
National Board Certified Teacher
STANYS Leadership

Gene has been a teacher of science for over 30 years. He has taught in urban, rural and suburban districts and has taught everything from math to electronics to physics to astronomy and robotics. He prides himself on wanting to learn everything about everything. Gene has created and run clubs encouraging gaming, science, astronomy, and has started multiple US FIRST robotics teams. Eventually creating a NASA research club that grew into a full STEM class. A constructivist at heart, Gene tries to make everything a learning experience. He helped start the physics days at various amusement parks and even had students doing physics labs on their senior trip to Boston. If there was something new to try, Gene dives headfirst into it, many times failing. This is true, even in the

classroom where he was not afraid to let the students create the labs for physics in true inquiry style.
Gene has been a National Board Certified teacher for the past 15 years. Gaining this certification inspired Gene to reach out and share his knowledge and methodology with other teachers, not only in New York state, but throughout the world using his presence on social media. It was during this time that he connected with NASA and started down a path of which would lead to his students creating projects that would fly to the International Space Station. Always learning, Gene even flew on board NASA's Zero-G plane (TWICE!) and used that experience to help others understand the world around them.
It was during this time that he also pursued a leadership role in STANYS, where he would eventually become president and help New York State as it created and adopted the new NYSSLS standards. He has been the Central Western Subject-Area-Representative, the physics Director-At-Large, the STANYS webmaster, served on multiple STANYS committees and led the team of teachers from across the state as they explored NGSS as they made it their own.
Although Gene retired from teaching in 2018, he did not fade into the woodwork. Asked to join NASA HUNCH he has spent the last years helping students across the country as they excitedly pursue their dreams of making things for space. He is currently the New York State mentor for NASA HUNCH, and has dreams of having students from all over New York State designing and building things for space. Some of these students will have their own dreams come true and eventually will walk on Mars. Gene describes himself as loud and chaotic. But don't mistake the loudness or the chaos as lack of purpose or drive. Through chaos comes learning. It is from the cycle of trying and failing that we truly learn. Chaos provides the opportunity for success and failure. Gene believes success is the inevitable conclusion of people who learn from their failures and therefore he has devoted his life to helping others experience learning with as few guard rails as possible.

- - -

2023 Margaret Ashida STEM Leader, STEM Workforce

Darren Coon

Teacher, Entrepreneur, Designer
https://teachergeek.com/

With over a hundred product designs and hundreds of millions of products sold, one might assume that Darren is a serial entrepreneur or inventor. However, he will tell you that he is a teacher, and his mission is to nurture the problem solvers and innovators of tomorrow. In the classroom he imparted the engineering design process. When implemented outside of the classroom, this same process allowed for the creation of products that now sit on the shelves of major US retailers. If you've used TeacherGeek STEM components or tried Karma (the drink with the powder that bursts from the cap), you are already familiar with some of Darren's creations.

Margaret Ashida Legacy STEM Leadership Past Awardees

2015

STEM Workforce: Cheryl Davidson
Executive Director of Long Island Works Coalition

PK-12 Education: Donna DeSiato, Ph.D.
Superintendent East Syracuse Minoa Central Schools

Higher Education: Dean Nina Leonhardt
Associate Dean at Suffolk County Community College

2016

PK-12 Education: Mr. Marvin Cadornigara
Teacher New Explorations into Science, Technology and Math NYC

PK-12/Higher Education: Michelle Kavanaugh, Ph.D.
Retired Superintendent of Schools; President WNY STEM Hub

STEM Workforce: Frank Roma, P.E.
NYS STEM Education Collaborative President-Elect

2017

PK-20 Education: Mark D. Vaughn, Ph.D.
Manager, Technical Talent Pipelining for Corning Inc and
Lead, Technology Community Office of STEM-Corning Incorporated

Higher Education: Dr. Candice Foley
Chemistry Professor Suffolk County Community College

STEM Workforce: Marc A. Chiffert, P.E.
Managing Member of CHIFFERT Engineering P.C.

Outstanding: Craig Clark, P.E., Ph.D.
Vice President for Economic Development-Alfred State

2018

PK-12 Education: Mr. Omer Zengin
High School Math, Robotic Team Advisor-Syracuse Academy of Science

Instructional Coach: Aaron Straus
Instructional Coach of STEAM-Salamanca City Central School District

District Level: Kathy Southwell
Executive Director of Curriculum, Learning and Instruction-
East Syracuse Minoa School District

Higher Education: Mary Margaret M. Small, Ed.D.
Office of Educational Partnerships-Clarkson University

2019

K-6 Education: Jennifer Leonberger
STEM Curriculum Mentor-Greater Southern Tier BOCES

7-12 Education: Ellen Falk
Mathematics Teacher-North Salem High School; AMTNYS; NYSED; NYSSEC

District Level: Lisa Blank
Director of STEM Programs-Watertown Central School District; North Country STEM Learning Network

Higher Education: Lorena Harris, Ph.D.
CSTEP and LSAMP Director-SUNY Schenectady

STEM Workforce: James King
Partner-King + King, Architects

Margaret Ashida Legacy
STEM Leadership Past Awardees Continued...

2021

PreK-6 Education: Heather Delity
Middle School STEM Teacher and Robotics & eSports Coach
Gouverneur Central School District

7-12 Education: Erika Robert
Math Department Chair, Schoharie Central Schools
NYS Master Teacher Emeritus

7-12 Education: Tammie (Meredith) Borland
Questar III BOCES & New Visions Medical Program Instructor
Physics, Chemistry, Biology, and Engineering Teacher

7-12 Education: Kyle Crawford
CTE Team Leader and Technology Teacher
Coxsackie-Athens Middle School & High School

Lifetime Achievement: Charles H. Goodwin, DTE
Past President - New York State STEM Education Collaborative
Board of Directors - Center for Technology and Innovation
Binghamton. N.Y.

2022

7-12 Education: Jason Fahy
Biology Teacher East Syracuse Minoa Schools
CNY Teacher Collaborative

7-12 Education: Melissa Hirt
Technology and Engineering Education Teacher
Stephen and Harriet Myers Middle School
NYS Emeritus STEM Master Teacher

Higher Education: Dr. Anurag Purwar
Associate Professor of Mechanical Engineering
SUNY Stony Brook University

STEM 360 – NYSSEC 2023 Summer Institute

Tour Options

For Tours A-E, preregistration is required.

Visit the **Alfred Farmers Market** on Sunday, July 30 from 11:00 AM – 3:00 PM
For more information, visit alfredfarmersmarket.com

Tour Session 1 — Sunday, July 30, 2023 — 1:00 - 2:30 PM

Tour A – Cleanroom Tour (1.5 PD)

Gather and meet Aric Bryant at **SLC 3rd floor** at 12:50 PM

The Clean Laboratory facility houses a clean room for advanced device, microstructure, and circuit development. Within the lab are state-of-the-art instruments for designing, fabricating, characterizing, and testing complex micro-scale structures and devices in microelectromechanical systems (MEMS) and microelectronics.

Tour B – Agriculture Automation and Robotic Milking Tour (1.5 PD)

Gather and meet Phil Schroeder at **SLC 3rd floor** at 12:50 PM

The Alfred State Organic farm laboratory boasts the latest agricultural automation and robotics technology. See the robotic milking machines in action and the organic farm which is designed to prepare students to enter the workforce as leaders in the industry.

- - - - - - -

Tour Session 2 — Sunday, July 30, 2023 — 3:00 - 4:30 PM

Tour C – Microgrid Tour (1.5 PD)

Gather and meet Tim Cochran at **SLC 3rd floor** at 2:50 PM

The Power Systems Laboratory contains professional trainer modules that simulate the latest power system engineering technology. Micro Grid systems play a huge role in the design and operations of smart grid systems that are quickly assisting us each with energy management and controls within our homes and businesses. View the system modules that include Micro Grid Stand-alone operation and Isolated Parallel grid operation as well as Energy Management modules.

Tour D – **Nursing Sims Laboratory Tour** (1.5 PD)

Gather and meet Jennifer Guthrie at the at **SLC 3rd floor** at 2:50 PM

See for yourself how Nursing and nursing education are all about STEM. Please join us for a tour of the technology available and used for live lab training in healthcare education. Experience for yourself the skills and simulation labs for the Nursing program. Come to learn about mid and high-fidelity simulation and try it out for yourself!

- - - - - - -

Tour Session 3 — Sunday, July 30, 2023 — 6:00 - 9:00 PM

Tour E – Kent Beer in Andover, NY

Brewery Tour with STEM Trivia (2 PD)

A bus will loop the campus and pick up registered participants at the various campus bus stops. The loop starts at Shults Hall at 5:45 PM and ends at the stoplight bus stop.

VENDOR TABLING

Sunday at 4:45 PM

Monday at 9 AM, 10:45 AM, 2:15 PM, & 4:30 PM

Tuesday at 9 AM & 10:45 AM

CDH: STUDENT GATHERING SPACE

Don't forget to fill out **VENDOR CONTACT FORMs** to be eligible for RAFFLE prizes.

Raffle drawing on Tuesday at lunch.

NYSSEC 2023 Summer Institute

Plenary Panel

Monday, 8 AM to 9 AM – CENTRAL DINING HALL

PLENARY MODERATOR

Karin Dykeman, MSEd
Assistant Professor
Department of Technology
SUNY Oswego

Sandra George
District STEAM Leader, Frontier CSD
Adjunct Professor Erie Community College
CAP Instructor Niagara Community College
WNY NYS Master Teacher Emeritus
Dr. Rod Doran STEM Educator Award

Steve Macho, EdD
Chairperson and Associate Professor
Career, Technical and Science
Education Dept
SUNY Buffalo State University

Dr. Anurag Purwar
Assistant Professor of Mechanical
Engineering-Stony Brook University, SUNY
CEO and Co-founder of Mechanismic Inc.
2022 Margaret Ashida STEM Leadership
Awardee

Dr. Marianne Strayton
Elementary Math Specialist Woodglen
Elementary - Clarkstown CSD; NYS
Master Teacher; President of AMTNYS;
Nationally Board Certified & Recipient of
the Presidential Awards for Excellence in
Mathematics and Science Teaching

Tracy Young
Elementary STEAM Specialist &
Engineering by Design Instructor (K-5)
Benton Hall Academy Elementary
School - Little Falls CSD
2023 Margaret Ashida STEM Leadership
Nominee

STEM 360 – Growing Opportunities in Changing Environments

CONCISE Presentation Directory WITH LOCATIONS

Monday, July 31, 2023
Session 1, 9:45 – 10:45 AM
Session 2, 1:15 - 2:15 PM
Session 3, 3:00 – 4:00 PM

Tuesday, August 1, 2023
Session 4, 8:00 - 9:00 AM
Session 5, 9:45 – 10:45 AM
Session 6, 11:00 AM – 12 NOON

Session	ID#	Title – *Presenter(s)*	Room
8:00–9:00 AM		Plenary Session – Moderator Ms. Karin Dykeman	CDH
Monday 9:45–10:45 AM **1**	1a	Teaching Climate Change While Addressing New York Standards AKA: Everything You Wanted to Know About Climate Change But Were Afraid to Ask – *K. Christie-Blick*	Allegany
	1b	Using Student-Made Stop Motion Video To Show Understanding – *A. Huntress*	PHS 106
	1c	Integrating the Engineering Design Process and ELA is a Snap(pyXO) – *M. Wicks*	PHS 101
	1d	Teaching Students the Skill of Computational Thinking – *J. Kling & R. Sun*	PHS 105
	1e	Teaching Energy Conservation through Roller Coaster Design and Construction – *E. Harp*	PHS 216
	1f	3 Ways to Use Invention and Entrepreneurship to Engage Your K-5 Classroom: Giving Students Voice and Choice – *K. Geramita*	PHS 107
11:15 AM		Keynote Address – Dr. Marion Terenzio; Lunch	CDH
Monday 1:15–2:15 PM **2**	2a	Incorporating the Arts into the Teaching of Climate Science – *K. Christie-Blick*	Allegany
	2b	Designing Products for Space with a Truly Out-of-This-World STEAM Program – *G. Gordon*	PHS 106
	2c	The Metagenomics Education Partnership: Harnessing the Power of Microbial Genome Sequencing and Big Data with High School Students and Teachers – *S. Koury, S. Small, N. Nowak, & J. Bard*	PHS 107
	2d	Computer Science and Digital Fluency Standards (are Already!) in Your Classroom – *B. Galluzzo, M.M. Small, L. Burkhalter*	PHS 105
	2e	Taking your Students on a Virtual Tour – *B. Bealer*	PHS 216
Monday 3:00-4:00 PM **3**	3a	Drone Cadets in the Classroom – *T. Reid & G. Cantwell*	Allegany
	3b	Effective Literacy and Writing Strategies in the Science Classroom – *M. Dye*	PHS 107
	3c	A Sneak Peek at ITEEA EbD TEEMS (Engineering by Design K-5 – *T. Young*	PHS 101
	3d	Solving Elastic Collision Without a KE Postulate – *P. Duveen*	PHS 105
	3e	STEAM is Elementary – *B. Terry & J. Doxsee*	PHS 216
4:30–6:00 PM (4:15 PM SET-UP)		Poster Exhibition Session	CDH
6:00 PM		Dinner; Ashida Awards; Keynote Address – Dr. Oliver Robinson	CDH
Tuesday 8:00-9:00 AM **4**	4a	STEAMed Drones in the Educational Classroom – *S. Demorcy*	Allegany
	4b	DOUBLE SESSION -PART A: Building Paper Circuits on Our Way to Interactive Art in all Content Areas/Building Paper Circuits on Our Way to Interactive Art in all Content Areas – *L. Yager*	PHS 106
	4c	Teaching STEM Through the Use of Music – *F. Pidgeon*	PHS 101
	4d	Quantum Computers-What Does It Mean for Education? – *R. Rittenhouse*	PHS 105
	4e	Claim-Evidence-Reasoning (CER): Are You CERtain Your Students Understand the Data? – *M. Dye*	PHS 107
Tuesday 9:45-10:45 AM **5**	5a	Perceptions of Technology/Engineering Education Influence on Integrated STEM Education Teaching and Learning – *C. Greene*	PHS 101
	5b	DOUBLE SESSION -PART B: See 4b above for PART A	PHS 106
	5c	Hour of Engineering - Shining a Spotlight on the "E" in STEM – *L. Simpson*	Allegany
	5d	Come and Play With Us! Tech Toys to Enhance Instruction – *M.M. Small, B. Galluzzo, & L. Burkhalter*	PHS 216
	5e	What is the Storyline Behind 3-D Learning in Science? – *J. Zawicki & L. Brosnick*	PHS 105
	5f	Mathematical Problem Solving for All – *M. Dye*	PHS 107
Tuesday 11 AM - 12 PM **6**	6a	PMi Citizen Developer - Next Gen Digital Literacy Skills – *S. Mulford & R. Huseynov*	Allegany
	6b	Let's Engage Students through Phenomena-based Science Instruction – *M. Dye*	PHS 107
	6c	Equity in Science Education – *J. Zawicki, F. Pidgeon, B. Tulloch, J. Cunningham, A. Serotsky, B. Tulloch*	PHS 101
	6d	STEM in Motion – *D. Morse*	PHS 105
	6e	How to Get Students to Publish in a Peer-Reviewed Journal – *R. Beal, & F. Damkaci*	PHS 216
12:00 PM		Lunch; Raffle; Keynote Address – Mr. Bob Bechtold	CHD

PHS is the Physical & Health Sciences Building ▫ The **Allegany Room** is in **CDH** Central Dining Hall

STEM 360 – Growing Opportunities in Changing Environments

NYSSEC 2023 Summer Institute

Presentations

Monday, July 31, 2023
Session 1, 9:45 – 10:45 AM
Session 2, 1:15 - 2:15 PM
Session 3, 3:00 – 4:00 PM

Tuesday, August 1, 2023
Session 4, 8:00 - 9:00 AM
Session 5, 9:45 – 10:45 AM
Session 6, 11:00 AM – 12 NOON

Image KEY

--- Target Audiences ---

preK-4 5-8 9-12 13-16 Industries


Science


Technology


Engineering


Mathematics


English Language Arts


Arts

Session 1, Monday, 9:45 – 10:45 AM

preK-4 5-8


S


T


E


M


ELA

1a CDH-Allegany Room

Kottie Christie-Blick - University of San Diego

Teaching Climate Change While Addressing New York Standards AKA: Everything You Wanted to Know About Climate Change but Were Afraid to Ask

This session is for you elementary teachers who want to deepen your understanding of the causes and effects of climate change, as well as answer the question, "How do we know?". You will learn how to teach climate change at an age-appropriate level for your students, and take a look at multiple resources you could integrate into your lessons. You will also learn how to answer a student who declares, with great conviction, to you and the class, "My dad is the smartest person I know. He doesn't believe in climate change." Been there. Let's talk. Those of you looking to incorporate The Arts into your climate unit, while empowering your students to take climate action, are encouraged to join me for my following session, Incorporating The Arts into the Teaching of Climate Science.

This session provides teachers with background knowledge to enable them to teach climate science with confidence. Having taught climate in the elementary classroom from 2009 (to 2019 when I retired from the classroom to spend more time as a climate change education consultant and a university instructor), I have a large repertoire of resources that have been "classroom tested". In this session, participants come to realize where climate fits into NYS Science Learning

Standards, matching climate science concepts with disciplinary core ideas for each grade level. They are introduced to activities that get students using crosscutting concepts (especially cause and effect), and science and engineering practices (especially developing and using models). Simple graphing programs on the computer that help students understand the connection between math and science as they manipulate variables are explored. I share a website started by my students, Kids Against Climate Change, as an example of how technology can be used to spread the word to develop a culture of environmental stewardship, so needed in today's world.

- - - - - - - - - - - - - -

5-8 **9-12**


S


T

1b PHS 106

Anne Huntress - STANYS, AAPT, AACT

Using Student-Made Stop Motion Video to Show Understanding

This session will provide participants with numerous examples of how easy it is for students to create their own STOP MOTION VIDEOS. Productions can represent ideas for particle motion during phase changes, chemical reactions, or any other applicable concept (erosion, seasons, Krebs Cycle, reproduction, etc.). Applicable to any Middle or High School Science class, by incorporating this straightforward skill, students will be engaged and find a deeper understanding for difficult concepts. If time allows, participants will have access to iPads and Legos in order to create their own quick little stop motion video for demonstration purposes. This session will be utilizing a Stop Motion Video App that is available on iPads and Chromebooks in order to allow students to more deeply understand the more difficult, "invisible" functions often discussed in Science classes. Various NYS Standards could be implemented but a few are as follows:

MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and phase (state) of a substance when thermal energy is added or removed.
MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
HS-LS1-7. Use a model to illustrate that aerobic cellular respiration is a chemical process whereby the bonds formed result in a net transfer of energy.
HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate to form continental and ocean-floor features.
HS-PS1-8. Develop models to illustrate the changes in the composition of the nucleus of the atom during the processes of fission, fusion, and radioactive decay.
HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction.

- - - - - - - - - - - - - -

preK-4 **5-8**


T


E


ELA


Arts

1c PHS 101

Marie Wicks - NSTA; NSF/Mechanismic, Inc.

Integrating the Engineering Design Process and ELA is a Snap(pyXO)

Elementary STEM Education for grades K-6 should be fun and a snap to execute. But, with today's time, space, and money constraints many school districts find this more of a burden and wishful thinking than it needs to be. But problems often encourage exciting solutions, such as the STEM lab model that can seamlessly and efficiently provide an adaptable, flexible, and fluid way to integrate the Engineering Design Process with children's literature utilizing key components to make it a snap to do. Using the customized Grab-Go lesson plans created specifically for the SnappyXO Inventors Kits and Robotics Kits made possible by a grant from the National Science Foundation, video books, and the open-source builder's app created for SnappyXO, the answer to the quandaries STEM educators and their school districts are experiencing could be solved in a snap.

- - - - - - - - - - - - - -

preK-4 5-8


T


M

1d PHS 105

Jennifer Kling - Souderton Area School District, Pennsylvania
Robert Sun - Suntex International, Inc.

Teaching Students the Skill of Computational Thinking

Within the next few years, Computational Thinking will be one of the New York State standards — be ready! Join us for a hands-on, exciting presentation about Computational Thinking — a skill necessary not just for the classroom but for life! How do we teach children to think critically and solve problems on their own? This is not simply a Technology, Coding or Mathematics issue — we need to teach students to be computational thinkers so they can learn how to identify any problem and consider ways to break it down into small, manageable steps to solve.

Participate in an open discussion that will describe ways to help your students learn to be better Computational Thinkers. We'll talk about decomposition, pattern recognition, abstraction, and algorithms. As we discuss the different steps and strategies, you'll have the opportunity to work through and discuss a range of challenging and engaging activities. Resource suggestions will be provided.

- - - - - - - - - - - - - -

preK-4 5-8


S


T


E


M

1e PHS 216

Ellen Harp - NYSCATE, NYSTEEA

Teaching Energy Conservation through Roller Coaster Design and Construction

Students from elementary school and up can be engaged in learning Newton's Laws of Motion through the study of existing roller coasters in nearby amusement parks. What really cements their learning, however, is when students design, build and test roller coasters of their own creation and apply structured STEM thinking to what they have made with their own hands. Come enjoy the engineering design process in action and take away resources to inspire your own teaching!

- - - - - - - - - - - - - -

preK-4


S


T


E


M


ELA

1f PHS 107

Kath Geramita – CreositySpace

3 Ways to Use Invention and Entrepreneurship to Engage Your K-5 Classroom: Giving Students Voice and Choice

Effective writing skills are fundamental to student success throughout school and their career. Figuring out how to effectively address multiple writing levels in your classroom, or simply engage elementary students in developing their writing skills, can be a challenge. Getting students to connect to and see value in their ideas is a key ingredient in student engagement--both in STEM and in general--and in fostering student confidence. The *Book of Ideas (BOI)* is an easy-to-implement classroom tool designed to let students connect with and see value in their ideas. Similar to an adult inventor's notebook, the *Book of Ideas* encourages students to write, draw, explore, and discuss their own ideas and inventions.

This session provides ideas and support for teachers and administrators as they work to stimulate writing, scientific thinking, innovation, and problem solving by their students. It also provides ideas and support for teachers to incorporate more science and engineering content into their classroom instruction.

- - - - - - - - - - - - - -

Keynote Address – Dr. Marion Terenzio
Monday, 11:15 AM
CENTRAL DINING HALL (1 PD)

Session 2, Monday, 1:15 – 2:15 PM

preK-4 5-8 9-12

2a CDH-Allegany Room

Kottie Christie-Blick - University of San Diego

Incorporating The Arts into the Teaching of Climate Science

Description: This session introduces you to an array of ideas for art, music, writing, and drama to incorporate into your STEAM lessons on climate. Dare I say that teaching climate change can be fun?! In this session, you'll see examples of multiple climate-related projects (large and small) that have been used successfully with students. Brainstorming with other session participants will allow you to increase your learning exponentially during our short time together. Our goal is to inspire and empower students to take climate action and encourage them to help create a culture of environmental stewardship through creative and fun project-based learning that communicates climate science effectively to the greater population. You will also learn how you can receive funding for some of those great ideas of yours! Those of you looking to increase your knowledge of climate science, and how it addresses the NYS Science Learning Standards, are encouraged to join me for my session, Teaching Climate Change While Addressing New York Standards. This second session moves STEM to STEAM. I share projects I have done with my students that have helped them feel empowered in the fight against climate change. Having taught climate in the NY public elementary schools for ten years, I have developed a number of effective teaching strategies. Examples: a set of student-drawn posters telling the climate story, that traveled the tri-state area for a year, on display at libraries, hospitals, town halls, etc.; Kids Against Climate Change, a website created by one class and continued by subsequent classes, so that it's now had over 155,000 views; a musical score composed and performed by my students about kids leading the way to slow down climate change; student-created videos and art put on social media to educate the public; publication of an article written by my students and myself on NOAA's website; persuasive writing by my students to convince local restaurants to cut back on plastic straws; creative artistic ways to encourage our school community to recycle; etc. In addition, I share my experiences being a NOAA Planet Steward, and opportunities for funding classroom project-based learning activities related to climate action.

- - - - - - - - - - - - - -

9-12

2b PHS 106

Gene Gordon - NASA HUNCH

Designing Products for Space with a Truly Out-of-This-World STEAM Program

The goal of the High School Students United with NASA to Create Hardware (HUNCH) Program is to inspire the next generation of space explorers through their participation in the design and fabrication of real-world products for NASA. This workshop will show how you and your students can become part of the HUNCH team where students can learn those

21st century skills everyone talks about while they go through an actual design-to-finish product process. Learn about all the programs of NASA HUNCH which include hardware fabrication, soft good(sewing) fabrication, culinary, design & prototyping, healthcare & biomedical, video, and flight configuration.

- - - - - - - - - - - - - -

9-12 **13-16**


S


T

2c PHS 107

Stephen Koury - STANYS
Sandra Small - University at Buffalo
Norma Nowak - University at Buffalo
Jonathan Bard - University at Buffalo

The Metagenomics Education Partnership: Harnessing the Power of Microbial Genome Sequencing and Big Data with High School Students and Teachers

A description of an ongoing partnership involving the Department of Biotechnical and Clinical Laboratory Sciences (BCLS) of the University at Buffalo Jacobs School of Medicine and Biomedical Sciences, the New York State Area Health Education Center System (NYSAHEC), the Center of Excellence in Bioinformatics & Life Sciences at the University at Buffalo and the Buffalo Niagara Waterkeeper (BNW) with underserved/disadvantaged schools across a 14-county region of Western New York with three main objectives will be described. The objectives are to: 1) develop and strengthen partnerships between local high schools, colleges, biotechnology companies, and local not-for profit organizations and serve as a pipeline for recruiting students to scientific and health-related careers, with an emphasis on those from underrepresented groups; 2) utilize community-linked citizen science involving metagenomic analyses of water samples in Western New York with underserved high school students, empowering them to assist in safeguarding local water resources for present and future generations: 3) allow students and teachers to sequence and analyze a microbial genome, supporting their explorations of Big Data, STEM and health-related careers related to genomics. Project activities will be described along with opportunities for future participation by teachers and students in Western New York.

- - - - - - - - - - - - - -

preK-4 **5-8** **9-12**


S


T


E


M


ELA


Arts

2d PHS 105

Ben Galluzzo, PhD - Clarkson University
Mary Margaret Small, EdD - Clarkson University
Leigha Burkhalter - Clarkson University

Computer Science and Digital Fluency Standards (are Already!) in Your Classroom

Explore how the NYS Computer Science and Digital Fluency (CSDF) Standards connect to your classroom curriculum in an interactive, hands-on session. Participants will review the standards and identify how they can be applied within various content areas. Examples of successful lessons developed and implemented by teachers who took part in Clarkson University's Student Preparation for Emerging Careers in Computer & Information Technology (SPECCIT) project will be shared. Participants should bring their own devices to access workshop materials.

- - - - - - - - - - - - - -

5-8 **9-12**


S


T

2e PHS 216

Brian Bealer - STANYS

Taking your Students on a Virtual Tour

Infiniscope is an online program that allows you to create a virtual field trip for your students. Students will be able to interact with a 3D environment to learn more about the natural world. Students will make observations to construct an explanation about natural phenomena on their tour.

- - - - - - - - - - - - - -

Session 3, Monday, 3:00 – 4:00 PM

preK-4 **5-8**


S


T


E

3a CDH-Allegany Room

Tony Reid - Drones Cadets
Grace Cantwell - Drone Careers in STEM

Drone Cadets in the Classroom

Drone Cadets is a unique Drone Education Program designed to produce safe and responsible drone pilots of any age. Our Certified Drone Instructors have taught more than a thousand students. We work with schools and organizations throughout the Hudson Valley and beyond, to bring life-changing technology education to families and under-served populations here and throughout the world.

- - - - - - - - - - - - - -

preK-4 **5-8**


S


ELA

3b PHS 107

Margo Dye - STEMscopes by Accelerate Learning

Effective Literacy and Writing Strategies in the Science Classroom

Come learn how to use effective literacy strategies so that students can better understand science content. Student understanding and critical-thinking skills will improve with these techniques. Join our constructivist approach that promotes literacy in the science classroom.

- - - - - - - - - - - - - -

preK-4


S


T


E


M


Arts

3c PHS 101

Tracy Young - Little Falls City School District, NYSTEEA, ITEEA

A Sneak Peek at ITEEA EbD TEEMS (Engineering by Design K-5)

Participants will learn about the ITEEA Engineering by Design TEEMS program and how Benton Hall Academy in Little Falls, ITEEA STEM School of Excellence winner, started it six years ago and how it runs in their K-5 building. Participants will engage in a hands-on activity just as the students would in an EbD classroom. Participants will leave with an understanding of the EbD program. If you are an elementary educator and don't know about EbD TEEMS (Technology, Engineering, the Environment, Mathematics, and Science) - join in for a hands-on tour hosted by Tracy Young-Elementary STEAM Specialist:

Introduction on background if ITEEA/EbD; What is EbD TEEMS? (use of Buzz LMS); Grades K-6 overview of EbD Building Blocks; How EbD uses STEL standards; One hands-on engaging lesson from Ebd; Intro to the Elementary STEM Council; Q&A and discussion.

- - - - - - - - - - - - - -

5-8 9-12 13-16

3d PHS 105

Peter Duveen - Museum of Brooklyn Art and Culture

Solving Elastic Collision Without a KE Postulate

The case of inelastic collisions has a simple solution, but elastic collisions introduce an additional unknown and require additional assumptions. Conservation of kinetic energy is the usual choice, but an approach using more self-evident assumptions is available. The problem can then be cast entirely in a Newtonian framework without resort to convenient but cognitively weak postulates such as off-the-shelf formulae regarding energy conservation.

- - - - - - - - - - - - - -

preK-4

3e PHS 216

Brian Terry - Hewlett Woodmere UFSD
Jeanine Doxsee - Independent Consultant

STEAM is Elementary

The participants will follow a sequence of activities that align with a progression of the skills found in the preK-2 engineering standards (NGSS). During the session, the participants will complete the hands-on activities in order to bring them back to their classrooms or modify them as they see fit. The first activity has the participants cut up a water cooler paper cup (cone shape) in order to maximize the "float time" after it was placed on a box fan pointed upwards. By watching the different designs, they will be encouraged to make a second design to test. The second activity has the participants making straw rockets using the following materials: plastic straw, clay, card stock. Using a straw rocket launcher, the participants will see how far their rocket goes. They will be allowed to redesign their rockets based on their observations. The final activity has the participants design a sail to be placed on a small car to be pushed by the wind of a fan. Certain parameters will be placed on the design (need versus wants, budget, efficiency). Teaching materials will be provided and ways to encourage science fairs and family STEAM nights for elementary grades. In science, the standards addressing force and motion will be addressed. Students will calculate the cost of one of their designs prior to the initial build which addresses the mathematics standards. The students will be exposed to the terms budget and efficiency. The students will follow the engineering design process during the unit while using a science/engineering notebook.

VENDOR TABLING

Monday at 9 AM, 10:45 AM, 2:15 PM, & 4:30 PM
Tuesday at 9 AM & 10:45 AM
CDH: STUDENT GATHERING SPACE

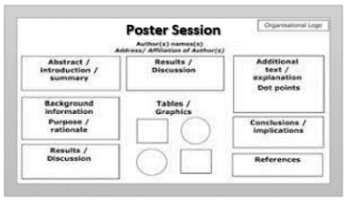
Don't forget to fill out **VENDOR CONTACT FORMs**
to be eligible for RAFFLE prizes.
Raffle drawing on Tuesday at lunch.

POSTER SESSION

Poster Exhibition

Monday, 4:30 PM to 6:00 PM

STUDENT GATHERING SPACE in CENTRAL DINING HALL (1 PD)



Adewale Adeolu - Clarkson University
Benjamin Galluzzo - Clarkson University

Teaching Mathematical Modeling to Students Using an Existing Model as a Starting Point in M2Studio

Jan DeWaters - Clarkson University
Miranda Wolf - Clarkson University

Food-to-Energy: A Science Experiment that Connects Food Waste, Resource Recovery, and Anaerobic Decomposition

Peter Duveen - Museum of Brooklyn Art and Culture

Solving Elastic Collision Without a KE Postulate

Poster Abstract: The case of inelastic collisions has a simple solution, but elastic collisions introduce an additional unknown and require additional assumptions. Conservation of kinetic energy is the usual choice, but an approach using more self-evident assumptions is available. The problem can then be cast entirely in a Newtonian framework without resort to convenient but cognitively weak postulates such Cobleskill-Richmondville Central Schoolas off-the-shelf formulae regarding energy conservation. *Target Audiences:* Intermediate Grades (5-8), Senior Grades (9-12), College (13-16). *Disciplinary Connections:* Science, Mathematics

Katie Kavanagh - Clarkson University
Gero Stoffels - Mathematics Education Institute, University of Siegen, Siegen, Germany
Ingo Witzke - Mathematics Education Institute, University of Siegen, Siegen, Germany

An International Industrial Problem Solving Experience for High School Students: Authentic STEM

Marci Klein - 3duxdesign

Build a Bot; Save a Species; It's all Fun and Games ('Til Someone Tells Them They're Coding)

Poster Abstract: Put down your laptops and roll up your sleeves! Join this hands-on workshop to learn how we can create highly engaging science and technology learning experiences with real world impact for our students. We will use the engineering design process to build our own endangered species bots and a preserve to protect them from extinction. *Target Audiences:* Intermediate Grades (5-8). *Disciplinary Connections:* Science, Technology, Engineering, ELA

POSTER SESSION

Stephen Koury - STANYS
Sandra Small - University at Buffalo
Norma Nowak - University at Buffalo
Jonathan Bard - University at Buffalo

The Metagenomics Education Partnership: Harnessing the Power of Microbial Genome Sequencing and Big Data with High School Students and Teachers

Poster Abstract: A description of an ongoing partnership involving the Department of Biotechnical and Clinical Laboratory Sciences (BCLS) of the University at Buffalo Jacobs School of Medicine and Biomedical Sciences, the New York State Area Health Education Center System (NYSAHEC), the Center of Excellence in Bioinformatics & Life Sciences at the University at Buffalo and the Buffalo Niagara Waterkeeper (BNW) with underserved/disadvantaged schools across a 14-county region of Western New York with three main objectives will be described. The objectives are to: 1) develop and strengthen partnerships between local high schools, colleges, biotechnology companies, and local not-for profit organizations and serve as a pipeline for recruiting students to scientific and health-related careers, with an emphasis on those from underrepresented groups; 2) utilize community-linked citizen science involving metagenomic analyses of water samples in Western New York with underserved high school students, empowering them to assist in safeguarding local water resources for present and future generations: 3) allow students and teachers to sequence and analyze a microbial genome, supporting their explorations of Big Data, STEM and health-related careers related to genomics. Project activities will be described along with opportunities for future participation by teachers and students in Western New York. *Target Audiences:* Senior Grades (9-12), College (13-16). *Disciplinary Connections:* Science, Technology

Asher Pacht - Clarkson University

Participatory Science and 21st Century Skills

Tony Reid - Drones in the Classroom
Grace Cantwell - Drone Careers in STEM

Drone Cadets in the Classroom

Poster Abstract: Drone Cadets is a unique Drone Education Program designed to produce safe and responsible drone pilots of any age. Our Certified Drone Instructors have taught more than a thousand students. We work with schools and organizations throughout the Hudson Valley and beyond, to bring life-changing technology education to families and under-served populations here and throughout the world. *Target Audiences:* Primary Grades (PK-4), Intermediate Grades (5-8). *Disciplinary Connections:* Science, Technology, Engineering

Joseph Zawicki - SUNY Buffalo State, STANYS, NYSSEC, WNY STEM Hub
Fred Pidgeon - STANYS
Bruce Tulloch - STANYS
John Cunningham
Arnie Serotsky - STANYS

Equity in Science Education

Poster Abstract: While students in New York State (arguably) have access to upper division science courses (Chemistry and Physics); most students in the state do not have experiences. All students should have equal access to these fundamental courses and to the career paths to which they lead. Data will be shared. *Target Audiences:* Primary Grades (PK-4), Intermediate Grades (5-8), Senior Grades (9-12). *Disciplinary Connections:* Science, Technology, Mathematics, ELA, The Arts

POSTER SESSION

Joseph Zawicki - SUNY Buffalo State, STANYS, NYSSEC, WNY STEM Hub
Sarbani Banerji - SUNY Buffalo State
Neal Mazur - SUNY Buffalo State

GEN CYBER: Security for All of Us

Poster Abstract: Prepare your students for the cyber world! This outreach program supports K-12 computer science programming throughout the Western New York region. Resources will be shared. *Target Audiences:* Intermediate Grades (5-8), Senior Grades (9-12).*Disciplinary Connections:* Science, Technology, Math

ELEMENTARY STUDENTS' POSTERS

Kottie Christie-Blick - University of San Diego

13 Student Posters – Climate Change

Target Audiences: Primary Grades (PK-4), Intermediate Grades (5-8), Senior Grades (9-12). *Disciplinary Connections:* Science, Technology, Math, ELA, The Arts

VENDOR TABLING

Monday at 9 AM, 10:45 AM, 2:15 PM, & 4:30 PM

Tuesday at 9 AM & 10:45 AM

CDH: STUDENT GATHERING SPACE

Don't forget to fill out **VENDOR CONTACT FORMs** to be eligible for RAFFLE prizes.
Raffle drawing on Tuesday at lunch.

Margaret Ashida STEM Leadership Awards Ceremony

AND

Keynote Address – Dr. L. Oliver Robinson (1 PD)

Monday, 7 PM

CENTRAL DINING HALL

Presentations continued

Tuesday, August 1, 2023
Session 4, 8:00 - 9:00 AM
Session 5, 9:45 – 10:45 AM
Session 6, 11:00 AM – 12 NOON

Session 4, Tuesday, 8:00 – 9:00 AM

preK-4 5-8 9-12 13-16 Industries — S T E M ELA Arts

4a CDH-Allegany Room

Stevenson Demorcy - STEAMedDrones, NYSTEEA, NYSTEM, NJEA

STEAMed Drones in the Educational Classroom

STEAMed Drones is an exciting program that uses flying drones with cameras to teach Science, Technology, Engineering, Arts, and Mathematics.

- - - - - - - - - - - - - -

preK-4 5-8 9-12 — S T Arts

4b PHS 106

Part A of a DOUBLE SESSION with Presentation #5b (Part B)

Laurie Yager - NYSCATE

Building Paper Circuits on Our Way to Interactive Art in all Content Areas

Paper circuits make use of familiar craft materials such as paper, tape, and stickers to build projects that can come to life through the power of circuitry. Learners can use these materials as a friendly on-ramp into a new world of physical computing in the arts. Because paper is such a flexible artistic medium, combining it with circuits expands ideas about what technology can look and feel like, nurturing artistic creativity and personal expression. During this session, you will explore the world of paper circuits through hands-on activities using circuit templates, circuit stickers (surface-mounted LEDs in a reusable sticker form factor), and copper tape, integrated into your own artwork. Then we will also explore how you might program your creations using the "Chibi Chip", with a Scratch-inspired block code editor by Microsoft MakeCode. Paper circuits can be a gateway to inspiration and understanding for those students who are interested in using technology as an art material through inexpensive and readily available art materials. Paper circuits can also be integrated into cross-curricular applications in many exciting ways. Bring computer science into your general education classroom! See Presentation #5b for Part B.

- - - - - - - - - - - - - -

preK-4 5-8 9-12 13-16 Industries — S T E M ELA Arts

4c PHS 101

Fred Pidgeon - STANYS

Teaching STEM Through the Use of Music

Attendees will use their area of expertise to put together raps or music relating to the subject area. I will explain what I have done and give examples and the attendees will create learning ideas through the use of music, rhymes, and changing modern music lyrics to fit the topic.

- - - - - - - - - - - - - -

9-12 13-16


S


T


M


ELA

4d PHS 105

Russell Rittenhouse - Alfred State College

Quantum Computers-What Does It Mean for Education?

STEM (Science Technology Engineering and Math) is an important part of today's education system. It is trying to prepare our young minds for their work in the job force. However, technology is constantly progressing and changing. Computers and networking are on the doorstep of a major change. Quantum computers are that change. Those machines will take our current world of true and false to a world of true, false, and a definite maybe. When that technology goes mainstream everyone that currently works in computer science, computer programming, networking and cybersecurity will have to change with the advancement. What exactly are quantum computers? Where are we in the stream of time bringing quantum computers to everyone? What does everyone need to know to take advantage of those computers? More importantly, how can we prepare our students for the world of quantum computers? This paper will research those questions and more on this subject.

- - - - - - - - - - - - - -

preK-4 5-8 9-12


S


E


M

4e PHS 107

Margo Dye - STEMscopes by Accelerate Learning

Claim-Evidence-Reasoning (CER): Are you CERtain Your Students Understand the Data?

CER is a way for students to explain phenomena in a scientific way. Participate in an inquiry-based investigation demonstrating how to use data collection to drive data-based conclusions using CER. Learn how to manage groups of students and guide them in how to think deeper, write scientifically, and incorporate vocabulary that strengthens their understanding of a phenomenon.

- - - - - - - - - - - - - -

Session 5, Tuesday, 9:45 – 10:45 AM

preK-4 5-8 9-12 13-16 Industries


S


T


E


M

5a PHS 101

Clark Greene - NYSTEEA

Perceptions of Technology/Engineering Education Influence on Integrated STEM Education Teaching and Learning

Report on initial research seeking to identify science, math, and technology education teacher perceptions of technology/engineering education influence within existing STEM collaborations toward further improving STEM education practice and effectiveness.

- - - - - - - - - - - - - -

preK-4 5-8 9-12


S


T


Arts

5b PHS 106

Part B of a DOUBLE SESSION with Presentation #4b (Part A)

Laurie Yager - NYSCATE

Building Paper Circuits on Our Way to Interactive Art in all Content Areas

See Presentation #4b for Part A.

- - - - - - - - - - - - - -

preK-4 5-8 9-12


S


T


E


M


ELA


Arts

5c CDH-Allegany Room

Libby Simpson - Siemens Digital Industries

Hour of Engineering - Shining a Spotlight on the "E" in STEM

Science, technology, engineering, and math, or STEM, have been a trend in education and global workforce development concerns for over 40 years. From computer science advocacy, the maker space movement, and career and technical education programs, STEM has been firmly embedded. However, the engineering aspect of STEM requires further exploration. With the Hour of Engineering from Siemens, one of the largest STEM employers in the world, the "E" in STEM has a place to shine.

Together we will explore why engineering is essential and how it can be used to provide a foundation for purposeful, fun, and rigorous learning. You will be able to identify how to connect online learning with hands-on offline activities accessible to all learners. We will locate the best methods for assessing individual and group activities. Finally, you can experience activities for yourself and develop an implementation strategy to bring back to your learning environment. Whether you are new to STEM or a seasoned educator, Hour of Engineering will help you provide activities with a purpose that prepares your students to think and act like engineers and show them that anyone can be an engineer!

- - - - - - - - - - - - - -

preK-4 5-8 9-12


S


T


E


M

5d PHS 216

Mary Margaret Small, EdD - Clarkson University

Benjamin Galluzzo, PhD - Clarkson University

Leigha Burkhalter - Clarkson University

Come and Play With Us! Tech Toys to Enhance Instruction

The NYS Computer Science and Digital Fluency (CSDF) Standards identify skills that students will need to acquire to live, work, and continue to adapt to an ever more rapidly changing world that is driven by technology. In this session, participants will have an opportunity to “play with” tech toys that can engage students (even reluctant learners) and enhance their instruction. These “toys” have been used by real teachers in Clarkson University’s Smart Start grant project. A door prize will be given away to a lucky participant! Come and join the fun!

- - - - - - - - - - - - - -

preK-4 5-8 9-12 S M ELA

5e PHS 105

Joseph Zawicki - SUNY Buffalo State University, STANYS, NYSSEC, WNY STEM Hub
Lisa Brosnick - STANYS, SUNY Buffalo State University

What is the Storyline Behind 3-D Learning in Science?

This session will present an overview of the New York State P-12 Science Learning Standards. The standards are being phased in; updates on the implementation schedule and key elements of the new standards will be presented and resources will be shared.

- - - - - - - - - - - - - -

preK-4 5-8 S M

5f PHS 107

Margo Dye - STEMscopes by Accelerate Learning

Mathematical Problem Solving for All

Teaching students to reason and problem solve is the cornerstone of quality math instruction. This session will highlight several engaging strategies such as Three Reads, Numberless Word Problems, and more that will provide multiple entry points for all students to engage in the math and ignite a passion for problem solving in your classroom!

VENDOR TABLING
Tuesday at 9 AM & 10:45 AM
CDH: STUDENT GATHERING SPACE

Don't forget to fill out **VENDOR CONTACT FORMs**
to be eligible for RAFFLE prizes.
Raffle drawing on Tuesday at lunch.

Session 6, Tuesday, 11:00 AM – 12 NOON

9-12 13-16 Industries T E

6a CDH-Allegany Room

Samantha Mulford - Project Management Institute
Rafsan Huseynov

PMi Citizen Developer - Next Gen Digital Literacy Skills

PMI Citizen Developer introduces the power of No code, low code technology to empower users with solution based tools and processes to help eliminate Shadow IT and backlog to bring a solution-based mindset to everyday problems/projects…with little to no coding experience necessary. Experience our collaborative Microsoft Student Hub and learn how you can turn ideas into Applications!

- - - - - - - - - - - - - -

preK-4 5-8 9-12


S


ELA

6b PHS 107

Margo Dye - STEMscopes by Accelerate Learning

Let's Engage Students through Phenomena-based Science Instruction

Looking for ways to increase student ideas in the development of investigative phenomena? We will work in collaborative teams to develop a driving question board. Let's discuss the types of phenomena and how they can be used effectively in the STEM classroom. Bring relevancy to students' lives!

- - - - - - - - - - - - - - -

preK-4 5-8 9-12


S


T


M


ELA


Arts

6c PHS 101

Joseph Zawicki - SUNY Buffalo State University, STANYS, NYSSEC, WNY STEM Hub
Fred Pidgeon - STANYS
Bruce Tulloch - STANYS
John Cunningham
Arnie Serotsky - STANYS

Equity in Science Education

While students in New York State (arguably) have access to upper division science courses (Chemistry and Physics); most students in the state do not have experiences. All students should have equal access to these fundamental courses and to the career paths to which they lead. Data will be shared.

- - - - - - - - - - - - - - -

5-8 9-12


S


T


E


M


Arts

6d PHS 105

Dana Morse - Texas Instruments Inc.

STEM in Motion

Create a STEM classroom through coding and TI graphing calculators. We will learn to code in basic and Python to create song, to drive a robotic car, and to fly drones. Learn lots of resources to bring to your classroom.

- - - - - - - - - - - - - - -

9-12


S


T


E


M

6e PHS 216

Rick Beal - Terra Science and Education
Fehmi Damkaci - Terra Science and Education

How to Get Students to Publish in a Peer-Reviewed Journal

The International Journal of High School Research (IJHSR) is a publication of Terra Science and Education, a 501.c.3. nonprofit organization and has been published since 2019. It provides a platform for high school students who are involved in research to learn publication about the publication process and to become a published author.
IJHSR is a peer-reviewed by university faculty members, STEM experts, postdoctoral researchers, and doctoral students. Four issues are published each year with selections from a variety of student work in all areas of science, including the behavioral and social sciences, technology, engineering, and math. We will go over the process that students and teachers can use to publish their work in IJHSR.

Vendor Raffle

AND

Keynote Address – Mr. Bob Bechtold
Tuesday, 12 NOON
CENTRAL DINING HALL (1 PD)

SUNY Alfred Townhouse Check-out Information

- Please check out at the Townhouse Staff Office.
- A drop box will be available for off hours also at the Townhouse Staff Office.

New York State STEM Education Collaborative Summer Institute Series

2010 SUNY Oswego
2012 Syracuse University
2014 SUNY Alfred State College
2015 SUNY Alfred State College
2017 SUNY Alfred State College
2018 SUNY Alfred State College
2019 SUNY Alfred State College
2023 SUNY Alfred State College

STEM Literacy is vital

‹› To All STEMists…Thank You ‹›

Thank you to SUNY Alfred State College of Technology
for
facilitating the NYSSEC 2023 Summer Institute

Alfred Campus

Agriculture Science (AGRLAB)
- Agriculture & Veterinary Technology
- Allied Health
- Instructional Technologies
- Student Records & Financial Services (Records, Financial Aid, Student Accounts)

Central Dining Hall (CDH)
- ACES Business Office
- Alfie's
- Allegany Room
- Amigos
- Refresh
- Student Gathering Place
- The Terrace

EJ Brown Hall (BRWNHL)
- Business

Engineering Technology Building (SET)
- Architecture & Design
- Bret Llewellyn Art Gallery
- Civil Engineering Technology
- Computer & Information Technology
- Dean, School of Architecture, Management & Engineering Technology
- Digital Media & Animation
- Mechanical & Electrical Engineering Technology

Hinkle Memorial Library
- Help Desk
- Marketing Communications
- Technology Services

Hunter Student Development Center (SDC)
- English & Humanities
- Math & Physics
- Social & Behavioral Sciences
- Student Success Center

Huntington Administration Building
- Academic Affairs
- Business Affairs
- Center for Community Education & Training
- Human Resources
- President
- Provost

MacKenzie Complex
- TimberLineZ (TLZ)

Mail Center
- Print & Mail Services

Orvis Activities Center (STUACT)
- Athletics Department
- Cappadonia Auditorium
- Orvis Strength and Conditioning Center
- Gym/Pool

Physical & Health Sciences (PHS)
- Dean, School of Arts and Sciences
- Nursing
- Physical & Life Sciences

Pioneer Center
- Pioneer Cuts: Barbershop & Styling Space
- Pioneer Fitness Center
- The Underground
- Student Senate Offices

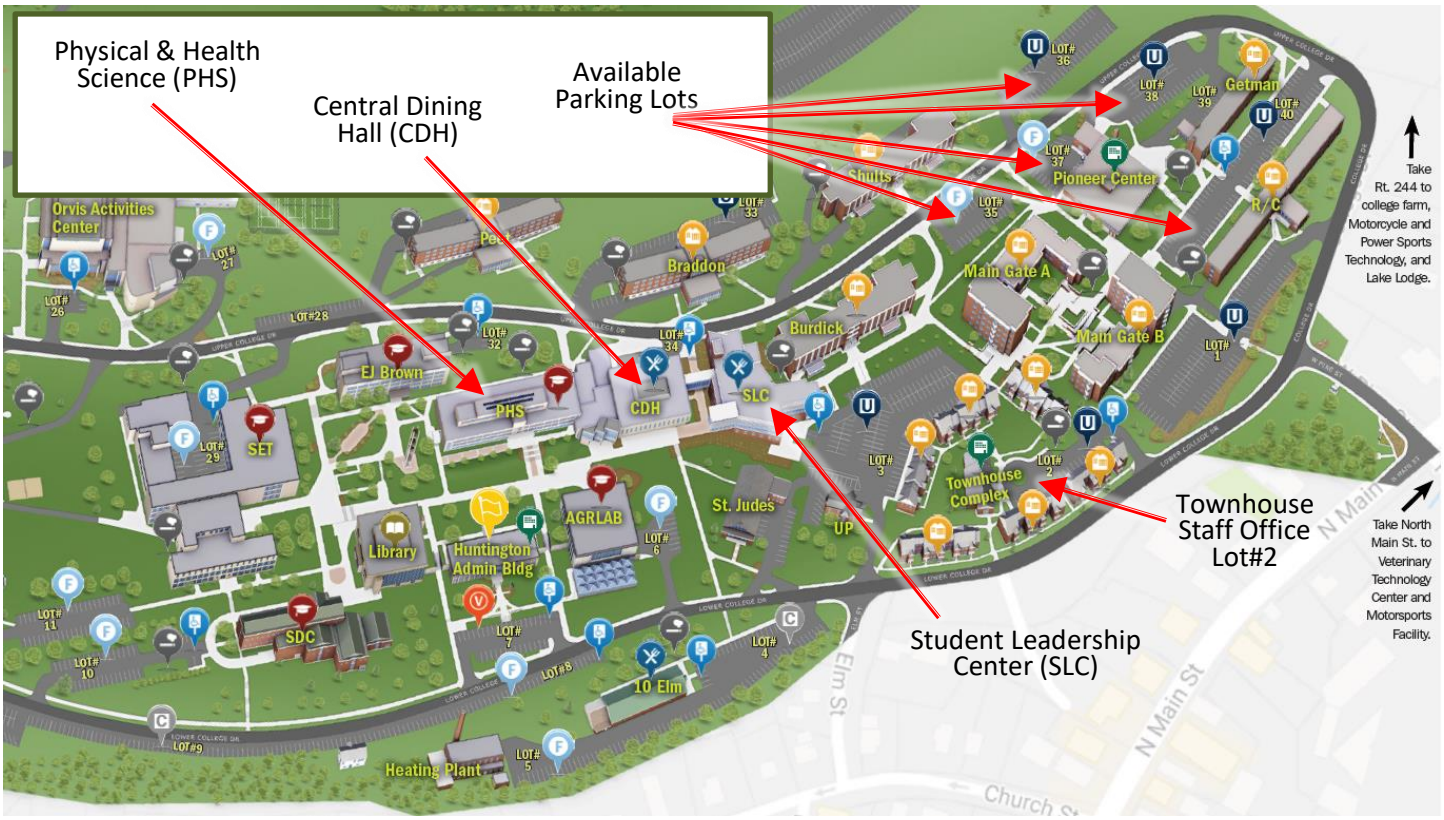
Student Leadership Center (SLC)
- Admissions
- Campus Store
- Career Development
- Center for Civic Engagement
- Center for Intercultural Unity
- Climbing Wall
- Enrollment Management
- Ever Green Cafe
- Judicial Affairs
- Student Engagement & Orientation
- VP for Student Affairs

TA Parish Hall
- Health & Wellness Services
- MindSpa

Townhouse Complex
- Townhouse Commons:
  - College Housing
  - Residential Services

UPD (Theta Gamma House)
- University Police Department
- *Available 365 days a year, 24 hours a day.*

Van Hall Alumni House
- Alumni Relations
- Institutional Advancement



Key

- Visitor Reception
- Administrative Building
- Academic Building
- Medical Services
- Accessible Parking
- Commuter Parking
- Residence Hall
- Dining & Gathering Area
- Library
- Designated Smoking Area
- Upperclassmen Parking
- Student Parking (including commuters)
- Faculty/Staff Parking
- Visitor Parking