

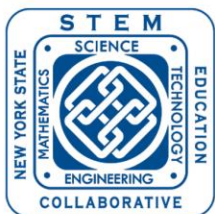
# STEM

CONNECTS LEARNING: DO IT FOR REAL!

## SUMMER INSTITUTE

JULY 30, 2017 • AUGUST 1, 2017

Alfred State  
SUNY College of Technology



Organized and  
Supported by

THE NEW YORK STATE  
STEM EDUCATION COLLABORTIVE

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Updated Conference Information and Schedule Changes  
Will Be Found at the NYS Stem Education Collaborative  
Website: [www.nysstemeducation.org](http://www.nysstemeducation.org)

Alfred State IT Hotline: 607•587•4357  
WIFI Internet Access does not require any ID or Password

# NYS STEM Education Collaborative

## 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.

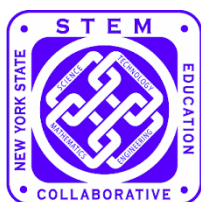
### Our Overarching Goals:

- 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.

### Member organizations:



N.Y.S. STEM Education Collaborative and Alfred State SUNY College of Technology  
Present the 2017 Summer Institute  
July 30 to August 1, 2017



**STEM: CONNECTS  
LEARNING  
DO IT FOR REAL!**

<b><u>Sunday, July 30, 2017</u></b>	<b><u>Monday, July 31, 2017, continued</u></b>
Noon: Vendor area open for vendors	4:15 PM to 5:15 PM Session 4 Presentations (1 PD) Physical and Health Science (PHS)Building
3:00 PM to 5:00 PM, Arrive, Check-in, and Registration at Student Leadership Building 3 <sup>rd</sup> Floor.	5:15 PM to 5:45 PM Vendors and Break Central Dining Hall 2 <sup>nd</sup> Floor
5:00 PM to 6:00 PM, Poster Session 1 (1 PD) and Vendor Area Open. Central Dining Hall (CDL)	5:45 PM to 6:45 PM, Poster Session 2 (1 PD), Vendor Area Open. Cocktail Hour Cash Bar, Central Dining Hall
6:00 PM to 7:00 PM Dinner. Central Dining Hall (CDL)	6:45 PM to 7:45 PM Dinner, Awards Central Dining Hall
7:00 PM to 9:00 PM STEM Trivia, Have Fun and Learn (2 PD). Also, Institute Introductions, Logistics and Updates.	7:45 PM to 8:45 PM Keynote Address by Deb Newberry Central Dining Hall
<b><u>Monday, July 31, 2017</u></b>	<b><u>Tuesday, August 1, 2017</u></b>
6:30 AM to 7:45 AM, Breakfast	6:30 AM to 7:45 AM, Breakfast
7:00 AM to 9:00 AM, Check-in	7:00 AM to 9:00 AM, Check-in
8:00 AM to 9:00 AM Plenary Session (1 PD). Orvis Activity Center Auditorium	8:00 AM to 9:00 AM, Session 5 Presentations (1 PD) Physical and Health Science (PHS)Building
9:00 AM to 9:30 AM Vendors and Break Central Dining Hall 2 <sup>nd</sup> Floor	9:00 AM to 9:30 AM Vendors and Break Central Dining Hall 2 <sup>nd</sup> Floor
9:30 AM to 10:30 AM Session 1 Presentations (1 PD) Physical and Health Science (PHS)Building	9:30 AM to 10:30 AM Session 6 Presentations (1 PD) Physical and Health Science (PHS)Building
10:30 AM to 11:00 AM Vendors and Break Central Dining Hall (CDL) 2 <sup>nd</sup> Floor	10:30 AM to 11:00 AM Vendors and Break Central Dining Hall 2 <sup>nd</sup> Floor
11:00 AM to Noon, Welcome and Keynote Address <u>Educating for the Future: It Can Be Done!</u> by Bill Daggett (1PD), Central Dining Hall	11:00 AM to Noon, Welcome and Keynote Address by Lieutenant Governor Kathy Hochul, (1PD)
Noon to 1:00 PM, Lunch, Central Dining Hall	Noon to 1:00 PM, Lunch, Central Dining Hall (CDH)
1:00 PM to 1:15 PM, Break	1:00 PM to 1:15 PM, Break, CDH, 2 <sup>nd</sup> Floor
1:15 PM to 2:15 PM, Session 2 Presentations (1 PD) Physical and Health Science (PHS)Building	1:15 PM to 2:15 PM, Session 7 Presentations (1 PD) PHS
2:15 PM to 2:45 PM, Vendors and Break, Central Dining Hall, 2 <sup>nd</sup> Floor	2:15 PM to 2:30 PM, Break, CDH, 2 <sup>nd</sup> Floor
2:45 PM to 3:45 PM Session 3 Presentations (1 PD) Physical and Health Science (PHS)Building	2:30 PM to 3:30 PM Session 8 Presentations (1 PD) Physical and Health Science (PHS)Building
3:45 PM to 4:15 PM, Vendors and Break, CDH, 2 <sup>nd</sup> Floor	3:30 PM to 4:30 PM, Townhouse Check-out
	Have a good year, See you soon.

**Professional Development Hours**

Sunday:	3
Monday	7
Tuesday	5
Total	15

## Please Thank Our Institute Sponsors

### Gold Sponsor



Career & Technical Education Technical Assistance Center

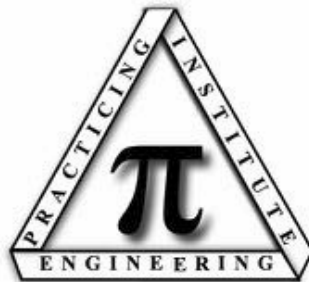
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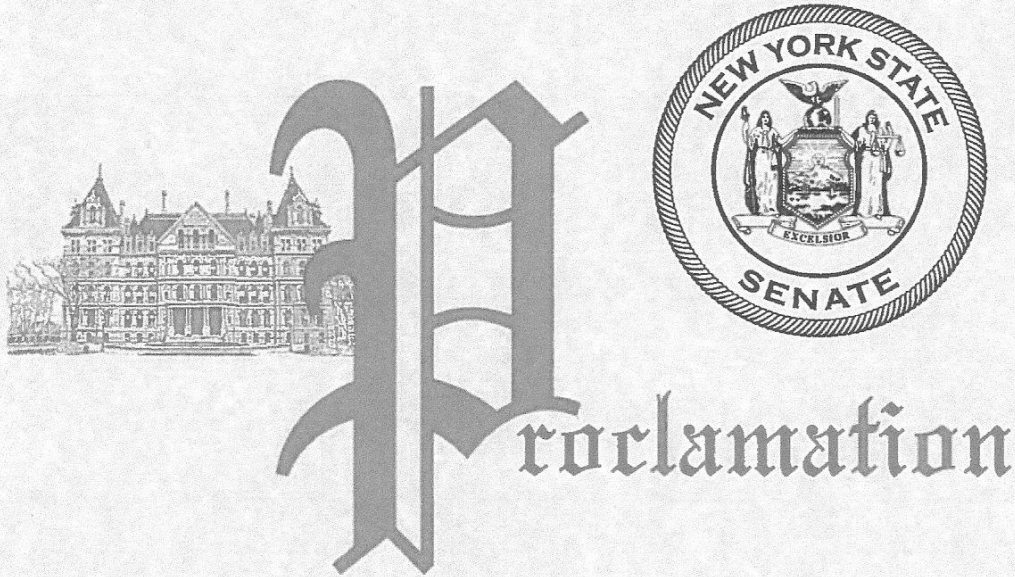
NYS United Teachers



Practicing Institute of Engineering

**SIEMENS**

*Ingenuity for life*



**Honoring the  
New York State STEM Education  
Collaborative's  
2017 Summer Institute  
at Alfred State College of Applied  
Technology**

**WHEREAS,** It is the sense of this New York State Senator to acknowledge the efforts of organizations who promote an enhanced education for the residents of this great Empire State; and

**WHEREAS,** Attendant to such concern, this member of the New York State Senate is justly proud to honor the New York State Science, Technology, Engineering and Math (STEM) Education Collaborative's 2017 Summer Institute, at Alfred State College from July 30 to August 1, 2017; and

**WHEREAS,** The NYS STEM Education Collaborative is an outstanding consortium of organizations, including the Association of Mathematics Teachers of New York State (AMTNYS), New York State Society of Professional Engineers (NYSSPE), New York State Technology & Engineering Educators Association (NYSTEEA), and the Science Teachers Association of New York State (STANYS), working to promote the scope and integration of STEM education on a statewide and national

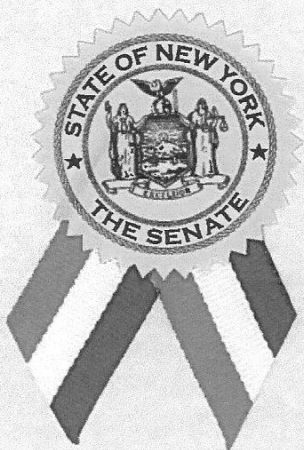
platform; many professionals ensure that a STEM education approach provides students, from pre-kindergarten through graduate school, with all of the necessary tools to strengthen the overall learning experience of students in preparation for their post-secondary and professional careers; and

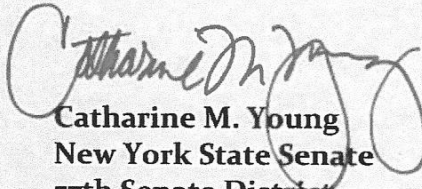
**WHEREAS,** The 2017 Summer Institute will encourage the sharing of successful and innovative classroom practices, provide enlightening debate and constructive discussion, and advocate for the modification of existing assessments with changes that incorporate STEM connections; it is certain that with a variety of keynote and plenary speakers to attend the summer institute, they will have a profound and positive impact on the future of education; and

**WHEREAS,** It is the intent of this member of the New York State Senate to publicly recognize those who are making significant contributions to the citizens and communities in this great Empire State; now, therefore, by way of this Proclamation;

**SENATOR CATHARINE M. YOUNG** honors the New York State STEM Education Collaborative's 2017 Summer Institute, and a copy of this Proclamation, suitably engrossed, should be transmitted to Craig R. Clark, PE, PhD, Charles H. Goodwin, DTE, and Frank Roma, PE, Co-Chairs of the NYS STEM Education Collaborative's 2017 Summer Institute.

Proclaimed July 30, 2017, By Order Of,



  
Catharine M. Young  
New York State Senate  
57th Senate District



**N.Y.S. STEM Education Collaborative  
STEM Connects Learning  
Do IT For Real!**

**July 30, 2017**

**Greetings Everyone!**

**On behalf of our Collaborative's planning committee, members, and partners it is a great pleasure to welcome you to our fifth STEM Summer Institute at Alfred State in 2017! We believe the offerings of our institute, including the wide range of STEM integrated topics, knowledgeable and experienced presenters (representing all levels of learning), the plenary panel, our outstanding keynote speakers, networking opportunities, and the array of STEM connected vendors, provide you with experiences that can greatly enhance and expand your instructional strategies. In addition to sitting in on presentations related to your subject and grade level, we feel it is important for you to attend presentations connected to other disciplines as well. You will be amazed at the ideas you can glean that actually benefit your instruction. Gaining a greater understanding of what we are all about is in the true collaborative spirit.**

**Can you imagine how capable, resourceful, mentally agile, turned on, and confident our students would be with solving real world problems, if they were exposed to integrated STEM learning, on a consistent basis, K through 12 and beyond? In fact students would have a much clearer understanding of how the world around them works and how they can live and work productively, effectively, and flexibly to meet the ever changing demands of their present day and future world. In essence, this approach is the over-arching goal our Collaborative has for New York State and across the nation.**

**It has been a great joy and wonderful human experience to work so closely with representatives from STANYS, NYSTEEA, NYSSPE, and AMTNYS. Our collaborative's approach to STEM instruction and learning provides the glue that brings us together. This institute serves as a model for making American education relevant, exciting, challenging, practical and meaningful to all students at all grade levels. Our Collaborative cannot thank the Alfred State administration and support staff enough for their tremendous support, hospitality, and guidance throughout our entire planning process. Truly our Collaborative, its partners and Alfred State have operated as one team and one magnificent collaboration.**

**Enjoy all the offerings of our institute. Through STEM integrated learning we are all connected.**

**Charles H. Goodwin, DTE, Chairperson  
N.Y.S. STEM Education Collaborative**



SUNY College of Technology

10 Upper College Drive  
Alfred, New York 14802

Office of the President  
(607) 587-4010  
FAX: (607) 587-4209

March 28, 2017

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 high placement rates in these programs are a testament to our committed and successful faculty and students.

The College is proud of its focus on educating students for 21<sup>st</sup> 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.

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 "Connect Learning Do It for Real." 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 in STEM careers. Alfred State commends the NYS STEM Education Collaborative on developing this conference and realizes the importance of its mission. We are honored that you have again chosen to be at Alfred State in Western New York.

Please enjoy yourselves and learn from 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. If you have questions please contact us.

Have a terrific conference!

Dr. Skip Sullivan  
President



**Office of Academic Affairs and the Provost**

State University Plaza  
Albany, New York 12246  
[www.suny.edu](http://www.suny.edu)

30 July 2017

Dear STEM Institute Participants,

Greetings from the Empire State STEM Learning Network! Comprised of 'STEM Hubs' from across New York State, we are part of the national STEMx initiative that is managed by Battelle – the world's largest nonprofit research and development organization. I'm delighted to welcome you to the fifth Summer Institute of the NYS STEM Education Collaborative! The Institute's theme expresses a need which is more important than ever before – "STEM Connects Learning – Do it for Real!". The ideas you will share, and the skills you will gain, over the next few days are essential in helping to continue to improve STEM education in New York State.

It is well known that students who complete a degree in the STEM disciplines have a strong chance of entering a productive career track, and this is a credit to their teachers. As Neil deGrasse Tyson has said, "STEM is hard"... and if it wasn't for their outstanding teachers many students might not master it. In learning STEM students often also master the essential 'soft skills' of teamwork, collaborative learning and problem solving, communication of complex ideas, and perseverance in the face of learning complex and challenging material.

The 2017 Institute host, The State University of New York at Alfred, is providing a great setting for STEM learning and networking. Many thanks to the planning committee for all its hard work to create this opportunity to integrate and innovate. Most of all, thanks to all participants for everything you do to advance high quality STEM education for all!

Sincerely,

A handwritten signature in black ink, appearing to read "Phillip Ortiz". The signature is stylized with a large, looped 'P' and a cursive 'Ortiz'.

Phillip Ortiz, Ph. D.  
Assistant Provost for Undergraduate and STEM Education  
Coordinator, Empire State STEM Learning Network  
[Phillip.Ortiz@SUNY.edu](mailto:Phillip.Ortiz@SUNY.edu)



## Science Teachers Association of New York State, Inc.

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(516) 783-5432  
info@stanys.org  
www.stanys.org

July 2017

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*A chapter of the National  
Science Teachers Association  
(NSTA)*

*A member of the New York  
State Council of Education  
Associations (NYSCEA)*

Dear Fellow New York State STEM Educators,

On behalf of the *Science Teachers Association of New York State* (STANYS), I welcome you to the Summer 2017 NYS STEM Education Collaborative Institute. I thank you for taking the time to collaborate with professionals that share our passion for STEM education. Institutes like this offer a valuable opportunity for us to increase our depth of understanding of topics, exchange ideas and share our enthusiasm for STEM.

Since the adoption of the new New York State P-12 Science Learning Standards in 2016, K-12 science education is grappling with a shift from mostly content driven instruction to teaching and learning through three dimensions - science and engineering practices, disciplinary core ideas and cross cutting concepts. Students learn by exploring phenomena, experiencing activities, engaging in dialogue, and constructing knowledge while gathering an understanding of the natural world. In addition to asking questions, science students are now expected to identify problems and design solutions. This conceptual shift is the essence of STEM. Science programs implementing curricula based on the new science standards approach should integrate learning that was previously taught in isolated subjects. Science teachers are moving from the "sage on the stage" and facilitating student directed learning using scenarios that engage and encourage greater understanding with less emphasis on science facts and vocabulary. Students should be presented with learning opportunities that integrate all the STEM disciplines plus the communication practices associated with ELA.

A reason I'm excited about the future of STEM education in New York and encourage science teachers to participate in STEM conferences is that the inter-connectedness of STEM complements the initiatives behind the new science standards. Having led STEM workshops in the US and Central America, I appreciate that a curriculum offering real world problems and student directed learning is compelling and engaging for all age groups. An approach that integrates all the disciplines will result in increased STEM literacy for all students.

This year's theme "STEM: Connect Learning - Do it for Real!" offers a program that should help teachers educate our students to be critical thinkers, encourage more to pursue advanced degrees and expanded our STEM-capable workforce.

Sincerely,

*Helen E Pashley*

Helen Pashley  
President STANYS 2017-8

STANYS 121<sup>th</sup> Conference,  
November 3 - 6, 2017  
Friday - Monday  
Rochester NY




New York State  
Technology & Engineering  
Educators' Association



We're the  of STEM  
Fostering Technological Literacy in All Students

July 30, 2017

On behalf of NYSTEEA, I welcome you to the New York State STEM Institute at Alfred State SUNY College of Technology. The planning committee has done an outstanding job in developing the conference program. Over the next few days you will have an opportunity to network with dozens of professionals who envision STEM as a collaborative effort among Science, Technology and Engineering, and Math educators. This STEM Institute is the perfect opportunity to see what and how teachers in other disciplines are teaching and delivering content that connects to what you are doing in your classroom.

At NYSTEEA we know that Technology and Engineering Education is the  heart STEM education. Our definition of Technology and Engineering Education is the application of tools, materials and knowledge to solve problems. We teach the process of designing and engineering solutions where students learn in a hands-on, minds-on environment of invention and innovation. In Technology Education classes around the state, teachers are helping students work through the process of design to create something while applying the knowledge they know about a specific content area.

Together as STEM teachers we understand the importance of the theme of this summer's institute, "STEM Connects Learning *Do it for Real*". We know that more than ever in the United States, and in New York, STEM professionals are in high demand. I've learned through various experiences that a STEM focused education, opens up an access to an array of career options opens-up all over the state. These few days will encourage all of us to learn more about the diverse landscape of STEM careers and bring that information back to our students. Facilitating discussions with our students about these STEM careers will help New York State continue to thrive as a leader of innovation and invention around the nation and the world.

I look forward to meeting you so when you see me, please introduce yourself and tell me about what you teach as well as what you think we can do to make a real difference for our students. Together we are stronger and we can make STEM real for our students. STEM is a way of thinking, a method of teaching, and a process of learning.

Thank you,  
Liz Gallo  
NYSTEEA President



## **The New York State Society of Professional Engineers, Inc.**

*The Founding Society of the National Society of Professional Engineers*

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**Legal & Legislative Counsel**

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May 23, 2017

Dear STEM Institute Participants:

At the New York State Society of Professional Engineers (NYSSPE) we are passionate about inspiring the next generation of engineers and science professionals, but inspiring them starts with YOU!

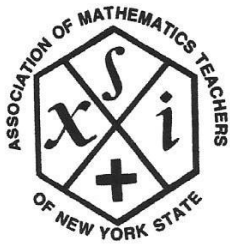
Again, I want to commend you for another dynamite year of commitment to educating and exciting our youth. Your efforts are helping them to solve some of the world's biggest problems.

Thank you for your dedication and tireless work to help our students of New York State better themselves, every single day.

Please accept my absolute best wishes for continued success and a wonderful Institute.

Best Regards,

Anthony Fasano, PE, LEED AP, ACC  
Executive Director, NYSSPE



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MATHEMATICS TEACHERS OF  
NEW YORK STATE**

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*Corresponding Secretary*

**RACHEL LINEHAN**  
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Albany, NY 12203

Dear STEM Institute Colleague:

I am pleased to welcome you to the 2017 NYS STEM Education Collaborative Summer Institute "**STEM: Connects Learning – Do It For Real!**".

These are amazing times to be involved in STEM education. We have a unique opportunity to help all of our students stay globally competitive in terms of innovation and invention. We can guide them to think deeply, connect methods, reason, and justify.

Over the next three days, please enjoy the numerous interactive presentations from dedicated presenters. Together we will be learning how to effectively integrate various instructional approaches into our teaching and learning environments. These approaches will enable us to enhance student learning through hands-on investigation and discovery and build new lessons that offer students opportunities for relevant, real-world problem solving.

What is the real power of the NYS STEM Collaborative? For me, it is expanding my personal learning network, making connections with colleagues, and sharing best practices. I encourage you to take time during the Summer Institute to seek out these kinds of opportunities. Doing so will help us build and strengthen our STEM educator community.

I hope that at the end of the Summer Institute you walk away with new ideas, new perspectives and a network of fellow educators to draw upon for insights and mentoring. As a STEM educator, you make learning come alive for students, and encourage them to see themselves as having the talents and abilities to be whatever they want to be, including scientists and engineers. Thank you for all you do to inspire students and transform student learning!

Sincerely,

David Hurst  
AMTNYS President



800 Troy-Schenectady Road, Latham, NY 12110-2455 ■ (518) 213-6000 ■ [www.nysut.org](http://www.nysut.org)

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July 2017

Dear STEM Institute Participants:

I am pleased to send greetings to educators from around the state attending the New York State 2017 STEM Education Summer Institute: "*STEM: Connects Learning; Do It For Real!*" at Alfred State SUNY College of Technology. NYSUT is proud to support the 2017 Summer Institute and the work of the New York State STEM Education Collaborative.

NYSUT is a staunch supporter of professional development and recognizes the professional development needs of our members to be effective in the classroom to ensure our students have the skills necessary to succeed in STEM and STEM related fields.

Educators from all stages of the education system need to understand the importance of STEM education and see the continuum of STEM skills necessary for their students. The theme of this year's STEM Institute will reinforce the importance of involving educators of all levels in understanding the education pipeline and the career opportunities available to students.

Thank you for your hard work, dedication and commitment to STEM education and our students.

Sincerely,

Andrew Pallotta  
President



## New York State STEM Education Collaborative 2017 STEM Institute Planning Committee

Charlie Crumb	Career & Technical Education –Technical Assistance Center
Ellen Falk	Association of Math Teachers & NASA Endeavor Project
Timothy Fowler	Network for Youth Success & NYS STEAM Girls Collaborative
Elizabeth Gallo	President – N.Y.S. Technology & Engineering Educators Association
Chuck Goodwin, DTE	NYSTEEA & STEM Collaborative Chairperson
Gwendolyn Maturo-Grasso	Central New York STEM Hub
Robert Hazen	AMTNYS – STEM Education Collaborative Webmaster
Nina Leonhardt	SUNY Suffolk – Long Island STEM HUB
Terry McSweeney	N.Y.S. United Teachers – Professional Development
Dr. Phyllis O'Donnell	Science / Biology Professor at SUNY Broome
Catherine Osiecki	Brookhaven National Labs & Long Island STEM HUB
Timothy Ott	Director CTE – Technical Assistance Center
Fred Pidgeon	Past President – Science Teachers Association of N.Y.S.
Hilary Reilly	Science Integration Specialist with Questar III BOCES
Dr. Robert Rogers	AMTNYS Past President - Professor SUNY Fredonia– Vendors
Frank Roma, PE	NYS Society of Professional Engineers – Program & Presenters STEM Collaborative Liaison
Danielle Bouton-Wales	Association of Math Teachers of N.Y.S.
Donna Yerdon	Association of Math Teachers of N.Y.S.
Dr. Joseph Zawicki	STANYS – Buffalo State – Program / Communication
	Alfred State – SUNY College of Technology 2017 STEM Institute Support and Planning
	Denise Brownell
Dr. Craig Clark, PE	Vice President for Economic Development



## 2017 STEM Summer Institute Keynoters



### Lt. Gov. Kathy Hochul

Lieutenant Governor Hochul chairs 10 Regional Economic Development Councils that have transformed the state's economy by building upon regional strengths through long-term strategic plans. The Councils include leaders from academia, business, labor and not-for-profits and, to date, have invested \$4 billion into more than 4,100 projects across the State. The Lieutenant Governor also chairs the State Workforce Investment Board which addresses the number one concern of businesses: the lack of skilled workers.

Governor Cuomo appointed Lieutenant Governor Hochul to chair the Task Force on Heroin and Opioid Abuse and Addiction. In this capacity, she convened eight outreach sessions across New York State to hear from experts and community members in search of answers to the heroin crisis and works to develop a comprehensive strategy for New York.

Hochul spearheaded Governor Cuomo's Enough is Enough campaign to combat sexual assault on college campuses beginning in 2015 hosting and attending more than 25 events. As the highest ranking female elected official in New York State, she continues to be a champion for women and families across the state. In March 2016, Governor Cuomo named her to the New York State Women's Suffrage 100th Anniversary Commemoration Commission.

Representing Governor Cuomo across the state, Hochul tours main streets, meets local business owners, visits college campuses and meets regularly with mayors, supervisors and other community leaders. The Lieutenant

Governor builds support for the Governor's initiatives including the minimum wage increase, paid family leave, ethics reform and infrastructure investment.



### Bill Daggett, Ed.D.

**Founder and Chairman of the International Center for Leadership in Education**, is recognized worldwide for his proven ability to move preK–12 education systems toward more rigorous and relevant skills and knowledge for all students. For 25 years, he has crisscrossed our nation, as well as the industrialized world, to lead school reform efforts to effectively prepare students for their future.

While an avid supporter of public education, Dr. Daggett also challenges all of us to be more focused on our children's future than on maintaining the schools of our youth. His insights and leadership have caused nearly every major education association in the country, hundreds of school districts, numerous political and business leaders, publishers,

and others to seek out his advice and guidance.

Before founding and now serving as Chairman of the International Center for Leadership in Education, Dr. Daggett was a teacher, local administrator, and a director with the New York State Education Department.

He is the creator of the Rigor/Relevance Framework®, which has recently become the cornerstone of much of the nation's school reform efforts. He is also the author of numerous books about learning and education, textbooks, research reports, and journal articles.

Dr. Daggett has been recognized as a distinguished alumnus by both Temple University and the State University of New York at Albany.

Dr. Daggett has a special commitment to individuals with disabilities. He and his wife, Bonnie, volunteer their time and lend their support to Wildwood Programs in upstate New York. Wildwood serves the needs of people of all ages who, like their daughter Audrey, have neurological impairments/learning disabilities or autism, by enabling them to become the best that they can be.



### Deb Newberry

Deb Newberry is the **Director/Instructor of the Nanoscience Technician program at Dakota County Technical College in Rosemount MN**. She created the 72 credit nanoscience technician program in 2003 and began the program with National science Foundation funding. Deb also serves as the Director and Principle Investigator of the Center for Nanotechnology Education, better known as Nano-Link, which has been funded by over \$9M from the National Science Foundation. Nano-Link educational content has been used by over 600 educators and has reached over 70,000 students.

Deb has served on the NanoProfessor Nanoscience Education Advisory Board, the Rushford Nanotechnology Organization Board and the 18-member Advisory Commission for the Minnesota Science & Technology Authority. Ms. Newberry is the Education Committee Chair for the Sustainable Nanotechnology Organization. She is a member of professional organizations such as the IEEE, ACS, MRS and ASEE and serves on multiple conference planning committees.

Deb has a master's degree in nuclear physics with minors in math, chemical and mechanical engineering. In 1990, she began work with NASA and the Department of Defense in the field of nanotechnology, studying radiation effects on nano based composite materials for satellite applications. Soon after, she chaired a national committee evaluating the impact of nanotechnology on satellite systems. She developed methodologies for the analysis and testing of radiation on satellite systems, working on more than 14 spacecraft in orbit. After 24 years of experience as a researcher and executive in the corporate world, she became a nanotechnology consultant and celebrated writer, coauthoring, *The Next Big Thing is Really Small*, a bestselling book on nanotechnology. Deb has spoken to multiple organizations, including the U.S. Senate and is the author of multiple book chapters.

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NYS STEM Education Collaborative

## 2017 Plenary Panel N.Y.S. STEM Education Collaborative



**Plenary Facilitator**  
Dr. Mark Vaughn, PhD  
Mgr. Technical Talent  
Pipeline & Lead For  
STEM Technology  
Corning Inc.



Dr. Helen Pashley,  
President STANYS  
Professor of International Schools  
at Seton Hall University



Dr. Robert Rogers, PhD  
Past President AMTNYS  
Distinguished Teaching  
Professor in Mathematics  
SUNY Fredonia



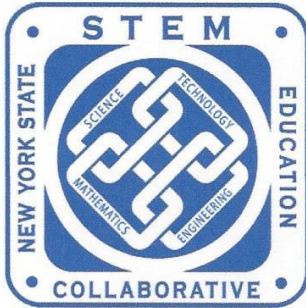
Marc Chiffert, PE  
NYSSPE  
Managing Member of  
CHIFFERT Engineering  
PC ("CAEC"), NYC



Mark W. Hardy, Ph.D.  
Professor and Chair  
Department of Technology  
School of Education  
SUNY Oswego



Hilary Reilly  
Science Integration: Questar III BOCES  
NE Regional Coordinator:  
Nano-Link, Inc.  
Hudson, NY



## **MARGARET ASHIDA**

### **STEM LEADERSHIP AWARD**

To honor the memory of Margaret Ashida, the New York State STEM Education Collaborative will honor outstanding individuals with an annual "Margaret Ashida STEM Leadership Award." Margaret Ashida was an energetic and driven person who was able to create a wave of change through tireless efforts to help develop connections between business, industry, and STEM educational leaders. Her ability to help others network from Pre-K through the university level, through business and industry, not only in New York State, but across the country, helped implement and foster pathways for the development of a national STEM workforce. Her advocacy helped create New York State STEM Hubs. She was able to get New York communities to collaborate in unique ways, fostering the development of STEM career pathways.

Margaret was the Founding Chair for the Empire STEM Learning Network, a statewide community-led collaborative. She was a board member for the NYS STEM Education Collaborative, a coalition of AMTNYS, NYSSPE, NYSTEEA, and STANYS. The collaborative works to deliver STEM education following the spirit and vision of New York State's MST Frameworks and Learning standards to skillfully and comprehensively address the concerted national cry for STEM Literacy. Margaret is missed, but will be forever remembered for her work ethic, her dedication to excellence, and the friendships she shared with all of those she met.

**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:

*"Advance": to  
accelerate the growth  
or progress of a cause*

+

*"STEM education" refers to the interdisciplinary  
teaching and learning of science, technology,  
engineering and mathematics, to a level of rigor  
sufficient to produce critical thinkers and problem  
solvers across all fields of endeavor who can thrive in  
the 21<sup>st</sup> century economy*

*The value proposition:  
innovation and  
economic vitality*

#### **The 2017 MARGARET ASHIDA STEM LEADERSHIP AWARD honorees are:**

- **PK-12 Education:** Mark D. Vaughn Ph.D.
- **Higher Education:** Candice Foley, Ph.D.
- **STEM Workforce:** Marc A. Chiffert, P.E.
- **Outstanding STEM Leadership:** Craig Clark, P.E., Ph.D.

**Special Guest Presenter 2017:** Anne LePore (Margaret Ashida's Sister-in-law)

**Awards Courtesy of:** Corning Inc.

**Committee Chair:** Gwendolyn Maturo-Grasso [glmaturo@syr.edu](mailto:glmaturo@syr.edu) [www.nysstemeducation.org](http://www.nysstemeducation.org)

**Committee:** Ellen Falk; Chuck Goodwin; Frank Roma; Joe Vargo; Mark Vaughn; Joe Zawicki;

*(Nominated Members were not permitted to score!)*

**FYI: 2018 Nominations will open in January**

## **2017 Margaret Ashida Higher Education STEM Leadership Award**

### **CANDICE FOLEY PhD**



For over 10 years, Dr. Candice Foley has leveraged successive National Science Foundation (NSF) and National Institutes of Health (NIH) STEM funding to provide academic and research opportunities that inspire students, expand their interest in STEM, and support their STEM career goals. In addition to her responsibilities as Professor of Chemistry at Suffolk County Community College (SCCC), she has been active on the national, state and local levels, serving as a plenary speaker at an NSF-S-STEM conference for principal investigators, as a symposium leader and presenter at multiple American Chemical Society (ACS) meetings, serving on a State University of New York (SUNY) panel investigating the value of student research experiences, as a charter member of the Empire State STEM Learning Network, and as a founding member and leader of the Long Island STEM Hub. In addition, Dr. Foley has secured private foundation funding to support STEM students. To date, she has been awarded over \$2,500,000 for scholarships, academic support and student professional growth.

Dr. Foley has developed STEM programs that provide scholarships, mentoring programs, and experiential learning opportunities to inspire students to pursue careers in STEM and has had a profound impact on students, faculty and on SCCC, the largest community college in the SUNY system. As an example, she fostered partnerships with over 10 SUNY institutions to expand STEM and STEM transfer opportunities for SCCC students and along with many more STEM and N.S.F. focused research projects.

Dr. Foley has a true passion for guiding students to becoming the next generation of STEM professionals. As evidenced by the large numbers of students and faculty affected, she is truly deserving of the 2017 Margaret Ashida Leadership Award for Higher Education.

**2017 Margaret Ashida  
STEM Workforce Leadership Award**

**MARC A. CHIFFERT, P.E.**



**MARC A. CHIFFERT, P.E.** is the Managing Member of CHIFFERT Engineering PC (“CAEC”), an architectural engineering design firm providing complete consulting architectural engineering design services and project management services. Clients include individuals as well as landlords, property owners and commercial tenants, interior designers, property managers, asset managers, and real estate developers and investors. With over 25 years of extensive engineering and construction experience, Marc is expert in architectural engineering, renewable energy, construction methodology, scheduling and project management, zoning and code analysis, and land development/subdivision.

Mr. Chiffert started his career with international construction management firms including Lehrer/ McGovern and Morse/Diesel in New York City and Magil Construction and Divco in Montreal. Marc Chiffert has lectured on engineering and construction methodology at the Pratt Institute of New York, and on AutoCad at the College of Aeronautics, Flushing, NY. Marc is a regular lecturer at the STEM Summer Institute. Marc was also member of the NYC Department of Building’s Technical Subcommittee for the new Energy Code as well as a member of the NYC Fire Department Code Revision Advisory Committee. Marc Chiffert is also a NYS Technical Real Estate Instructor.

**2017 Margaret Ashida  
PK-20 STEM Leadership Award**

**MARK VAUGHN, PhD**



Mark D. Vaughn, Ph.D. Manager, Technical Talent Pipelining for Corning Inc and Lead, Technology Community Office of STEM Corning Incorporated is a highly dedicated supporter of Stem Education. He is a great role model and in this role. Dr. Vaughn develops, implements and manages PK-20 science and engineering programs and initiatives in support of meeting the Technology Community's near term and long term technical talent needs. He is often speaks on this topic and is a leader in the state and southern tier is STEM education. He is one that never says no and is willing to do the hard work as well as lead in efforts to engage faculty and students. He is well known and respected by all in the STEM community.

Dr. Vaughn began his 28 year career with Corning in 1988 as a Research Technician. He holds a Bachelor of Arts degree in Physics from Alfred University, a Master of Science degree in Optics from the University of Rochester, and a Ph.D. in Electrical Engineering from Georgia Institute of Technology. Prior to his current role, Dr. Vaughn was a Research Associate in Modeling and Simulation where he was a noted expert in Optical Network Traffic Demand Modeling and Access Network Cost Modeling. In addition to his primary role, Dr. Vaughn has served the Technology Community and Corporation in a variety of other ways including serving as an Innovation Black Belt, the immediate past chairman of the Black Technology Network and the Project Manager for Leadership Fundamentals for Program Managers, one of the corporation's premiere leadership.

Dr. Vaughn is a native of Elmira, New York. He and his wife, Jeanette (who is an Elementary School Principal), reside in Painted Post, New York and are the proud parents of 5 children.

## 2017 Margaret Ashida Outstanding STEM Leadership Award

### CRAIG CLARK, PhD



For well over a decade Dr. Craig Clark has been an avid and engaged supporter of STEM education and STEM learning in a multitude of ways. Dr. Clark has been, since its inception, an active participant and leader with the New York State STEM Education Collaborative and with its individual member organizations including NYSTEEA, STANYS, AMTNYS and the NYSSPE. He made it possible for Alfred State to become one of the first partners with our NYS STEM Education Collaborative. Dr. Clark has been recently promoted to vice President of Economic Development at Alfred State and has facilitated the opening up Alfred State's SUNY College of Technology campus to host our summer institute in 2014, 2015, and now in 2017. He has provided exceptional guidance and hospitality to participants, presenters, vendors and sponsors. He truly understands the power of students, teachers, and workers being able to use and integrate the STEM disciplines while solving real world problems.

This highly respected educator and college administrator, over many years, has been instrumental running a number of renewable energy institutes. These training institutes are flush with STEM integration and application. He has worked miracles gaining a \$2.9 Million grant from NYSERDA that developed clean-energy programs statewide and a \$3.2 million advanced manufacturing programs at Burgard High School located within the City of Buffalo. He also facilitated a \$1 million grant from the Gleason Foundation for manufacturing programs. The Wellsville Campus that Dr. Clark has overseen for many years continues to improve its facilities through the Education Foundation and private and public grant support. This support brought to fruition, the Zero Energy Home, the new 16,500 square foot Construction Industry Workforce Development Center and the new 16,500 square foot Advanced Manufacturing Center, which is the first state funded building on the Wellsville Campus.

Craig Clark is now responsible for developing and implementing an economic and industrial development program for both Alfred State and Allegany County. His new emphasis is on attracting businesses and industries to locate within the county and promoting expansion of existing business and industries. Craig continues to be college liaison with the START – UP NY Program, Empire State Development, Appalachian Regional Commission, and other grant funding and economic development organizations related to the college. Dr. Clark worked closely with Margaret Ashida on a number of projects including two STEM Education Summer Institutes and the New York State Technology and Engineering Educators Association Policy Agenda and its Economic Imperative! He has served and serves as an example if someone who demonstrates all of the qualities and traits that Margaret Ashida lived by and exuded. Dr. Craig Clark, PE, PhD is an outstanding candidate for this prestigious award. Margaret Ashida would smile broadly over this nomination.

## **STEM Institute 2017 (July 30- August 1, 2017) Poster Schedule**

Sunday, July 30, 5:00-6:00 PM and Monday, July 31, 5:45-6:45 PM

Poster sessions are in the Central Dining Hall, Cafeteria

William Barnes, SUNY Canton

### **Faculty Intervention to Increase Biology Student Use of the Campus Tutoring Center**

Presents the results of an action research study conducted in the Fall 2016 of developmental students enrolled in an introductory level biology course. The intervention consisted of faculty emphasis to students at the start of each class meeting of the value of utilizing the campus tutoring center. The study examined if there was a quantifiable correlation between this faculty intervention and an increase in the time spent by students in the campus tutoring center.

Robert Bone, myON

### **Come by to experience the myON STEM Literacy Solution....hands on!**

How the myON Literacy Solution “builds” a bridge towards literacy for students of all ages and abilities, so, they CAN choose STEM careers. It is all about READING!

Timothy Cochrane, Alfred State College

### **Eat ( $e^t$ ) to Capacity: What's So Natural about Natural Logarithms? When Can You Actually Use Them?**

Electrical engineers use base  $e$  often. A simple example is when a capacitor charges. We'll wait until taking Calculus to derive the mathematic expression, but in this hands-on session you will see an exponential relationship at work. First, an explanation of the theory will be given in algebraic terms. Then you'll build a simple electrical circuit and measure the voltage across a charging capacitor. A plot of the result in time will show how close the actual measurements come to theory.

James Cronmiller, Monroe Community College

### **Student Self-Assessment: Does It Make a Difference in Success in the Classroom?**

The success of students in the classroom translates to retention and completion. Early warning strategies with proper intervention would appear an intuitive method of increasing the likelihood of student success. We describe a method, Student Self-Assessment, to improve success in the classroom. 93% of the students felt the process helped them with study habits and guided them in planning future strategies. Early intervention (counseling and guidance) through the use of this instrument was proven to be effective.

Peter Duveen, WSWHE BOCES; Member, AMTNYS

### **The Legacy of George H. Henshaw STEAMs ahead.**

19th Century civil engineer George H. Henshaw authored important papers in his field, but it was a drawing he executed in the 1850s that catapulted him to newfound fame more than a century and a half later: what is being touted in today's business management circles as the first modern organizational chart.

Timothy Fowler, Network for Youth Success

### **STEM and Afterschool**

This poster will show the connection between afterschool aka out-of-school time and informal STEM learning. It will illustrate the opportunities for promoting youth-driven, hands-on experiences with the scientific process and/or the engineering design process, and why afterschool time is ideal for connecting community partners who want to support youth growth and development.

Chuck Goodwin, NYS Technology & Engineering Educators Association

### **Effectively Integrating STEM While Designing an Air Droppable Survival Shelter**

The Air Droppable Survival Shelter is a pre-engineering case study that is a totally interconnected STEM Design Project. The shelter problem incorporates Research, Structural Forces, Structural Design, Ergonomics, Material Utilization, Documentation, Experimentation, Packaging, Contract Specifications, Mathematical and Physical Modeling, Prototyping, Testing and Analysis.

Jeremy Manning, Project QUERB

**Project QUERB: A Shared, Remotely-operated Experimental Platform to Explore Quantum Mechanics**

Project QUERB is a STEAM platform that enables students to collaborate and remotely operate sophisticated photonics equipment to perform quantum mechanics experiments. The platform also will have tools to create animations and other artwork to visualize the dynamics of subatomic particles and the experimental setup.

Maranda Miller, SUNY Maritime College

**Influential Factors for URM's Degree Obtainment**

The role of the US as a global innovator advances our national economy, and it requires us to increase the science, technology, engineering, and math (STEM) workforce. Despite the increase in national population, the STEM workforce maintains an employment disparity amongst underrepresented racial minorities (URMs). The increase of diversity within the STEM workforce aligns with our national increase in URM's earned STEM degrees. The goal of the poster is to provide insight on how historical laws/acts and institutional modifications encouraged URM's to fulfill a post-secondary STEM degree.

Stephanie Rugg, Alfred State

**Integrating Sustainability with Chemistry Class**

College chemistry students analyzed chemical processes or reactions and identified limitations with regards to their sustainability. This project involved critical thinking and engaged the students, and helped the students relate chemistry to real world applications.

Richard Partch, Clarkson University

**Advanced Core-Shell Colloid Chemistries for Industrial Applications**

Statements and apparatus diagrams and electron micrograph photos of a variety of products are presented with explanation what their importance is for advancing industrial technology

Shawn Zadeh, Ventovate, LLC

**A Novel Next-Generation Learning Method – Workflow and Project-Focused Communication Leading to Advanced Collaboration and Assessment Automated Functions**

First, it will introduce ab-initio philosophy, with a broad discussion of its application within adopted education standards (e.g. Common Core, NGSS). The method will be discussed as part workflow changes and part technology changes, with both aspects leading to a communication model for instruction and problem solving. Finally, the communication model's advantages for providing software features like automated grading and crowd-sourced help.

## **Summer Institute Series:**

**2010 SUNY Oswego/2012 Syracuse University/ 2014 & 2015 SUNY Alfred**

# **STEM Institute 2017 (July 30- August 1, 2017) Presentation Schedule**

## **Session 1, Monday, 9:30 AM-10:30 AM**



5--8



9--12



13--16



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1A Central Dining Hall (CDH) Allegany Room

Kristan Buckman, Accelerate Learning

### **The Value of Scientific Writing Scientific Explanations in STEM, Claim-Evidence-Reasoning**

CER is a way for students to explain, in a scientific way, how observations and data from an investigation are connected to science knowledge. This acclaimed and highly successful instructional strategy is changing how lab instructions are written and finally making science investigations meaningful for students. Growth rubrics and anchor writing samples are provided.



5--8



9--12



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1B Physical Health Sciences (PHS) Building -Room 106

David Czechowski, NYSTEEA, Hyde Park Central School District

### **Computer Science's Got Game**

Come join us for some game time as we explore several modern strategy board games that foster computer science skills. A European resurgence of board game design has brought a wave of new games that are very different from the American classics. These games offer open-ended challenges, information-rich environments, and a variety of new play mechanics. Computer Science teachers can use games in many ways to enrich and promote their program.



9--12



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1C Physical Health Sciences (PHS) Building -Room 107

Richard Partch, Clarkson University

### **Nanoparticle Chemistry Serving Humanity :**

#### **Particle Surface Modification for Improving Properties and Applications**

This presentation will describe how and why chemists, aka Molecular Engineers, play a leading role in the development of new materials and consumer goods that improve all aspects of human life. What they do allows all the other types of engineers to have the materials they produce goods from. In the past 30 years colloid, now referred to as nanoparticle science, has evolved into a mainstream activity of almost all chemical industry operations. The research presented is from achievements in the presenter's laboratory and represent the diversity of what is involved.



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1D Physical Health Sciences (PHS) Building -Room 216

Timothy Fowler, Network for Youth Success

### **STEM in Afterschool: Engage Youth For Real**

This session will use engineering and science project examples to show how afterschool time can be used to create authentic STEAM learning. Participants will engage in an engineering design challenge, and see how these experiences can be door-openers to larger opportunities for design, building, and research by youth. Emphasis will be on how afterschool time can be a point of contact for community partners to collaborate on STEM learning with youth.



K--4



5--8



9--12



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1E Physical Health Sciences (PHS) Building -Room 218

Ray Ann Havasy, Eric Patysiak, Center for Science Teaching and Learning (CSTL)

### **Project Based Learning- Essential for Motivation in STEM**

This hands-on, participatory workshop helps people understand and use PBL. As the teaching strategy described in NGSS and many educational research articles, PBL changes the way teachers teach and students learn. It is exciting and motivating for both student and teacher and can lead to many important discoveries! This workshop will get people involved immediately and easily.

## **Session 2, Monday, 1:15-2:15 PM**



5--8



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2A Physical Health Sciences (PHS) Building –Room 101

Chuck Goodwin, NYS Technology & Engineering Educators Assoc.

### **Effectively Integrating STEM While Designing an Air Droppable Survival Shelter**

The Air Droppable Survival Shelter is a pre-engineering case study that is a totally interconnected STEM Design Project. The shelter problem incorporates Research, Structural Forces, Structural Design, Ergonomics, Material Utilization, Documentation, Experimentation, Packaging, Contract Specifications, Mathematical and Physical Modeling, Prototyping, Testing and Analysis.



9--12



13--16



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2B Physical Health Sciences (PHS) Building –Room 105

Stephen Koury, University at Buffalo

### **The Western New York Genetics in Research and Health Care Partnership:**

#### **Description of Project Results and Hands on Experience with GENI-ACT**

We will describe the results of our project dealing with introduction of bioinformatics to high school teachers and students and allow hands on participation with the online toolkit known as GENI-ACT.



9-12



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2C Physical Health Sciences (PHS) Building –Room 106

Frederick White, NYSSPE

**AIR TRANSPORT ENGINEERING: Foundations of Operational Safety**

Air travel connects the planet's human population in a manner that was only a dream a mere 100 years ago. This presentation describes how engineers address air transport safety issues in the context of a robust regulatory environment. It provides an overview of Part 139 Federal Aviation Regulations that impact the registered professional engineer in regard to design and operation of airports, including aircraft arresting systems installed in the safety areas of some civil airport runway ends.



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2D Physical Health Sciences (PHS) Building –Room 216

James Alloway, EMSQ Associates

**Bridging STE(A)M Disciplines with Exploratory Data Analysis**

STEM graduates typically work in interdisciplinary teams. Team members must share a common language to boost team effectiveness. Sequential Exploratory Data Analysis, focusing on graphical techniques, provides this language and can be taught incrementally from the earliest grades. We present a seven stage approach for insightful data analysis.



9-12



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Arts

2E Physical and Health Sciences (PHS) Building –Room 107

James Cronmiller, Monroe Community College

**Student Self-Assessment: Does it Make a Difference in Success in the Classroom?**

The success of students in the classroom translates to retention and completion. Early warning strategies with proper intervention would appear an intuitive method of increasing the likelihood of student success. We describe a method, Student Self-Assessment, to improve success in the classroom. 93% of the students felt the process helped them with study habits and guided them in planning future strategies. Early intervention (counseling and guidance) through the use of this instrument was proven to be effective.



9-12



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2F Physical and Health Sciences (PHS) Building –Room 218

Ed Moloney, Academy of Applied Technology, a division of Eastern Suffolk BOCES, Member of NYSTEEA, LITEEA

Joe Fili, Retired Senior Technology Education Teacher, Member of NYSTEEA, LITEEA

**Hydrogen Energy and Transportation**

Participants will learn about Hydrogen Fuel as a renewable energy source and Hydrogen Fuel cell technologies. In particular, uses in transportation, storage, Hydrogen extraction. Participants will learn about the history of Hydrogen fuel, the pros and cons of using it and the infrastructure being put in to use it for public transportation. They will also learn about an exciting new competition being offered on the North East with hydrogen powered fuel cell remote controlled cars. This competition, sponsored by Horizon Energy, is currently taking place in Florida and California.

## Session 3, Monday, 2:45-3:45 PM



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3A Central Dining Hall (CDH) Allegany Room  
Casey Baumlin, Whitney Point School District

### **Increasing Rigor in Special Classes Using STEAM**

Making STEAM lessons and activities an integral part of special classes helps students with significant disabilities engage with more rigorous curriculum. Students with cognitive delays of all levels can access key components in STEAM. I will demonstrate STEAM activities and lessons that all levels of SWD's can engage with. I will focus both on special class settings (12:1:1, etc.) and SWD's in gen. ed. classrooms. The presentation will ask participants to work on differentiating STEAM to meet varied learning needs.



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3B Physical Health Sciences (PHS) Building –Room 106

Melissa Hirt, City School District of Albany, NYSTEEA District VP, Capital District STEM Master Teacher

### **Shrinky Dinks meet STEM**

This is a fun and engaging lesson for students to explore STEM concepts. Students work in teams to calculate scale factor of this unique plastic. They will also explore the science behind why they shrink. A keychain will be designed using their research to meet the design criteria.



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13--16



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ELA

3C Physical Health Sciences (PHS) Building –Room 105

Shawn Zadeh; Robert Wesolowski, Jr; Darlene Garcia Torres; Ventovate, LLC

### **A Novel Next-Generation Learning Method**

Beyond the poster content being described more in detail, we would go into discussions of the product development and team. A discussion will take place of how the software product was studied through research sites/methods, how it was modified adapted through interviews and the studies, an overview of the team, and a call to action/future works.



9--12



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3D Physical Health Sciences (PHS) Building –Room 216

James Alloway, EMSQ Associates

### **Fundamentals of Designed Experiments**

Many believe that good experiments vary a single factor at a time. The actual requirement is to estimate the effect of each factor independently. Statistically designed experiments permit one to vary all factors simultaneously and detect interactions, thus improving efficiency. This session introduces DOE basics using 3-D models to illustrate key concepts and Minitab software for calculations.

**3E continued**



9--12



13--16



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3E Physical Health Sciences (PHS) Building –Room 107

Marc Chiffert, NYS Society of Professional Engineers / Chiffert Engineering

### **Application of Math Equations to Real Life Architectural Engineering Problems**

Session will present examples of equations used in the design and construction of buildings and provide an overview of the types of problems solved in architectural engineering.

## **Session 4, Monday 4:15-5:15 PM**



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4A Central Dining Hall (CDH) Allegany Room

Robert Corbin, Discovery Education

### **Not What but Why? Crystallizing your purpose in STEM**

In 2017 teachers and students are hyper focused on the “what” of teaching and learning. What course are you taking? What scores are you achieving? What is your dream school? What is lost is the ever important why? In this session participants will begin to learn to crystallize a personal “why” of STEM so that they are teaching and learning with purpose and effectiveness. Interestingly enough by crystallizing the “why” of teaching and learning the “what” becomes clear.



9--12



13--16



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4B Physical Health Sciences (PHS) Building –Room 106

Frederick White, NYSSPE

### **Air Transport Engineering: Fail Safe Structural Design**

During the development of the Boeing 787 (Dreamliner), Alan Mulally, who at that time was CEO of Boeing Commercial Aircraft (and before that chief engineer of the extremely successful Boeing 777 project) walked into an auditorium filled with Boeing engineers tasked with turning the Dreamliner concept into reality. Before saying anything else, Mr. Mulally made this statement of fact: "Designing a new airliner requires a great deal of extremely challenging and difficult work". This presentation will highlight what some of those challenges are from the perspective of an engineer who was in that room, and introduce the attendee to a few of the basic engineering tools used to assure that the end result is a product that is safe to fly in.



9--12



13--16



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4C Physical Health Sciences (PHS) Building –Room 107

Thomas Amidon, Applied Biorefinery Sciences and Craig Clark, Preston Gilbert, Alfred State

### **New Forest Economy and Hot Water Extraction Biorefinery**

The presentation is a follow up of the 2015 presentation that will again discuss the New Forest Economy based on the Hot Water Extraction Biorefinery process. The clean process that extracts sugars extracts hemicellulosic sugars, lignin, acetic acid, and other valuable chemical assets from wood and agricultural fiber. These materials will be used to manufacture forest resource-based bio-products, including commercial fiber packaging, green compostable/biodegradable plastic, cellulosic nano materials, platform bio-chemicals, food additives, advanced technology biomaterials, high-tech wood products, and biofuels. The overall process can be used and discussed in science, engineering and technology classes.



9--12



13--16



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ELA

4D Physical Health Sciences (PHS) Building –Room 216

Timothy Cochrane, Alfred State College

### **Eat ( $e$ ) to Capacity: What's So Natural About Natural Logarithms?**

#### **When Can You Actually Use Them?**

Electrical engineers use base  $e$  often. A simple example is when a capacitor charges. We'll wait until taking Calculus to derive the mathematic expression, but in this hands-on session you will see an exponential relationship at work. First, an explanation of the theory will be given in algebraic terms. Then you'll build a simple electrical circuit and measure the voltage across a charging capacitor. A plot of the result in time will show how close the actual measurements come to theory.



5--8



9--12



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4E Physical Health Sciences (PHS) Building –Room 105

Tom Reardon, Youngstown State University

### **All Students Can and Should Learn Coding – Hands-On the TI-84**

#### **Using the New STEM Innovator Hub!**

Girls and boys in grades 7 and beyond need to learn some level of coding. Since many students have a TI-83/84 calculator, they can learn to program on that – it's in their backpacks! Learn how to teach coding in 10 minute bursts with immediate feedback online. Get hands-on experience with the Innovator Hub – program it to play your favorite song! Science, math, technology, engineering come alive!



5--8



9--12



13--16



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Arts

4F Physical Health Sciences (PHS) Building –Room 219

Kristan Buckman, Accelerate Learning

### **Using Argumentation as a STEM Strategy - Increasing Student Voice and Choice**

Teaching in a STEM classroom requires a new set of instructional strategies that build 21st Century Skills; one important one is Argumentation! Join us in this interactive, hands-on, and engaging session where Argumentation about Inventions and Innovations will be modeled and resources will be shared in ways to increase student voice and choice.

## **Session 5, Tuesday 8:00-9:00 AM**



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5A Central Dining Hall (CDH) Allegany Room

John Burke, Russell Rittenhouse, Alfred State College

### **Tales From the Technical College Classroom**

A facilitated discussion about building STEM skills that help students as they enter a technical college environment. What is working? What is needed? What will students be expected to do as a college student in a technical field?



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5B Physical Health Sciences (PHS) Building –Room 218

Dana Morse, Texas Instruments

### **STEM Behind Hollywood/NASA/Health and Sports**

With TI technology, students can explore STEM activities hands on to get a greater understanding of the Math, Science, Engineering and Technology behind the scenes in everyday life. Attendees will get the software to teach with for their classrooms and many free resources.



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5C Physical Health Sciences (PHS) Building –Room 105

Caitlin Bowen, Genesee Valley Central School District & NYSTEEA

### **The "T & E" of STEAM**

Session attendees will understand an overview of a successful Technology & Engineering department in a small rural school district and the direct connection to the school's PK-12 STEAM initiative.



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5D Physical Health Sciences (PHS) Building –Room 106

Deb Newberry, DCTC/Nano-Link

### **Using Nanotechnology to Enhance your STEM Focus**

The multi-disciplinary nature of nanotechnology creates an optimal avenue for integration into traditional science disciplines. Nanoscience based activities can easily be expanded to include all aspects of STEM education. This session will use hands on activities which cover nanoscience aspects and have been expanded to include STEM inclusive content.



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5E Physical Health Sciences (PHS) Building –Room 216

Robert Bone, myON

### **myON Digital Literacy Solution – Success with STEM!**

Educators understand that STEM education begins early, with the wonder of a young child discovering the increasingly larger world around him or her. If nurtured, this natural curiosity can extend throughout a lifetime. Research shows that one of the greatest challenges facing the United States today is attracting students who would not otherwise gravitate to STEM careers towards those fields. Come to the myON STEM presentation and learn how the myON Literacy Solution “builds” a bridge towards literacy for students of all ages and abilities, so, they CAN choose STEM careers. It is all about READING!

## **Session 6, Tuesday 9:30-10:30 AM**



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6A Central Dining Hall (CDH) Allegany Room

Hilary Reilly, Questar III

### **Real World Academics-Where Science, Mathematics and Literacy Come Alive!**

The integration of academics into Career and Technical fields of study has brought about a fundamental change in the way that content is being taught today. Instead of hearing, "Why do we have to learn this?" picture a lesson, unit or project that engages your students in an authentic experience resulting in knowledge that is retained well beyond their educational pursuits. The connection between real world applications and the content you teach provides students with much needed relevance and significance. With the NYS Common Core State Standards and the recent adoption of the new, NYS Next Generation Science Standards, our teachers have welcomed this validation of our teaching methodologies. CTE will share their knowledge, experience and curriculum.



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6B Physical Health Sciences (PHS) Building –Room 106

Leslie Tanner, Andrea Lynch, & Jeff Stevens, Monroe 2 Orleans BOCES

### **Interdisciplinary CTE Applications in High School Regents Math Courses**

In this session we will offer ideas to bring your math classroom to an authentic level. We will identify topics of math that can be taught through CTE. Your students will no longer ask the question, “When will I ever need to know this?”



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6C Physical Health Sciences (PHS) Building –Room 101

Jeremy Manning, Project QUERB

### **Project QUERB: A Shared, Remotely-operated Experimental Platform to Explore Quantum Mechanics**

Project QUERB is a STEAM platform that enables students to collaborate and remotely operate sophisticated photonics equipment to perform quantum mechanics experiments. The platform also will have tools to create animations and other artwork to visualize the dynamics of subatomic particles and the experimental setup.



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6D Physical Health Sciences (PHS) Building –Room 218

Dana Morse, Texas Instruments

### **STEM and Coding with TI Tools**

Using the TI technology that you currently have, there are many STEM and Coding solutions available right under your nose. See how to get the most out of the technology you already use and give students a path towards STEM careers.



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6E Physical Health Sciences (PHS) Building –Room 219

Mary Ann Nickloy, Kelly Fahrenkpf, NEATEC

### **What is NanoScience?**

Introductory overview of nanoscience and how size affects the property of materials. Using flashcards students compare objects ranging from macroscale to the nanoscale and match them up with scientific notation. Surface area reaction time is then explored using different size tablets dissolved in water while monitoring the height of the reaction over a given time. This module takes place over 4 +, forty minute periods

## Session 7, Tuesday 1:15-2:15 PM



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7A Central Dining Hall (CDH) Allegany Room

Elizabeth Viszt, Thomas Daniels, SUNY Alfred State

### **Play It Forward: Connecting Math and Chess**

Play It Forward is an interactive workshop connecting mathematics, chess and creative self-expression. By relating STEM to playing the game of chess, participants discover mathematics in a hands-on, experiential learning setting. Flipped classrooms, such as these, create an atmosphere of action and creativity that is self-directed and enhances academic achievement; students actively engage in the subject area more readily than with lecture-based instruction. Adding an oversized game of chess creates an element of fun and stimulates self-expression in a way that inspires learning. Game on!



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7B Physical Health Sciences (PHS) Building –Room 101

Joseph Zawicki, Kathleen Burke, STANYS, WNY STEM Hub, SUNY Buffalo State

### **Lesson Planning for the New NYS Science and Common Core Learning Standards**

The implementation of the New York State Science Learning Standards (NYSSLS) will require teachers to take a new perspective. Three-dimensional learning focuses on disciplinary core ideas (DCI), scientific practices and cross cutting concepts. Integrating the stem disciplines is challenging. This workshop will focus on preparing for developing, or selecting, curricula for classroom use.



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7C Physical Health Sciences (PHS) Building –Room 106

Theresa McSweeney, NYSUT

### **Update on Critical Issues Affecting our Profession**

Updated information on key provisions of legislation and New York State regulations affecting teachers will be presented. This information may include New York State Learning Standards, Grades 3-8 testing, Regents exams and other critical information to the teaching profession. Additional subjects will be discussed based on the interest of the participants.



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7D Physical Health Sciences (PHS) Building –Room 107

Joseph Liberto (Leader), Jennifer Leonberger, Katrina Keefe & Michelle Schaut

Greater Southern Tier BOCES STEM Education

### **STEM Curriculum Mentors Panel Discussion**

Panelists will share their experience, as well as lessons learned, as STEM Curriculum Mentors playing a vital role in the implementation of STEM teaching practices in classrooms across 24 districts in the Greater Southern Tier BOCES region. Panelists will provide an open forum for dialogue among participants and panelists where questions and comments by all will be encouraged and welcomed. Teacher training in STEM methodology, school administrative support, community involvement, university and corporate STEM programming, student engagement in STEM and future challenges for STEM sustainability are a sample of topics that will drive the discussion.

### **Session 8, Tuesday 2:30-3:30 PM**



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8A Central Dining Hall (CDH) Allegany Room

Wayne Uter, Thelma Uter, PI Resources

### **Dancing and Romancing with STEM**

A learning experience in science and math. A demonstration (with audience participation) of how teaching and learning STEM topics can be fun and engaging. Learning the planets of the solar system becomes a "far out" experience. Fractions and basic electrical circuits are used with music to create an "electrifying" memorable moment.



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8B Physical Health Sciences (PHS) Building –Room 101

Joseph Zawicki, Dan MacIsaac, SUNY Buffalo State,

Kathleen Falconer, SUNY Buffalo State & University of Cologne

### **Remote Classroom Observations**

Classroom observations may be challenging due to travel distances and building locations. We have explored the use of video conferencing tools to observe classrooms using a reformed teaching. This session will focus on the reformed teaching observation protocol, best classroom practices, and remote observation resources.



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8C Physical Health Sciences (PHS) Building –Room 105

Caitlyn Gironda, Saratoga Springs High School

### **Integrating Meaningful Technology into the Secondary Mathematics Classroom**

Teachers will examine pedagogy of effective integration of technological tools into the mathematics classroom and emphasize critical thinking and inquiry based activities with concrete examples. Teachers will also be given a host of resources to explore on their own and guided activities to get them started with digital tools like Desmos, Geogebra, and more.



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8D Physical Health Sciences (PHS) Building –Room 106

William Dean, Alfred State - SUNY College of Technology

### **What Makes a Community Green?**

Why do we live where we do? What makes a good place to live? How can we make the places we live even better? This presentation will explain Leadership in Energy Efficient Design (LEED), discuss LEED ND (LEED for Neighborhood Development), examine two very different case studies, and discuss the characteristics of good neighborhood design.



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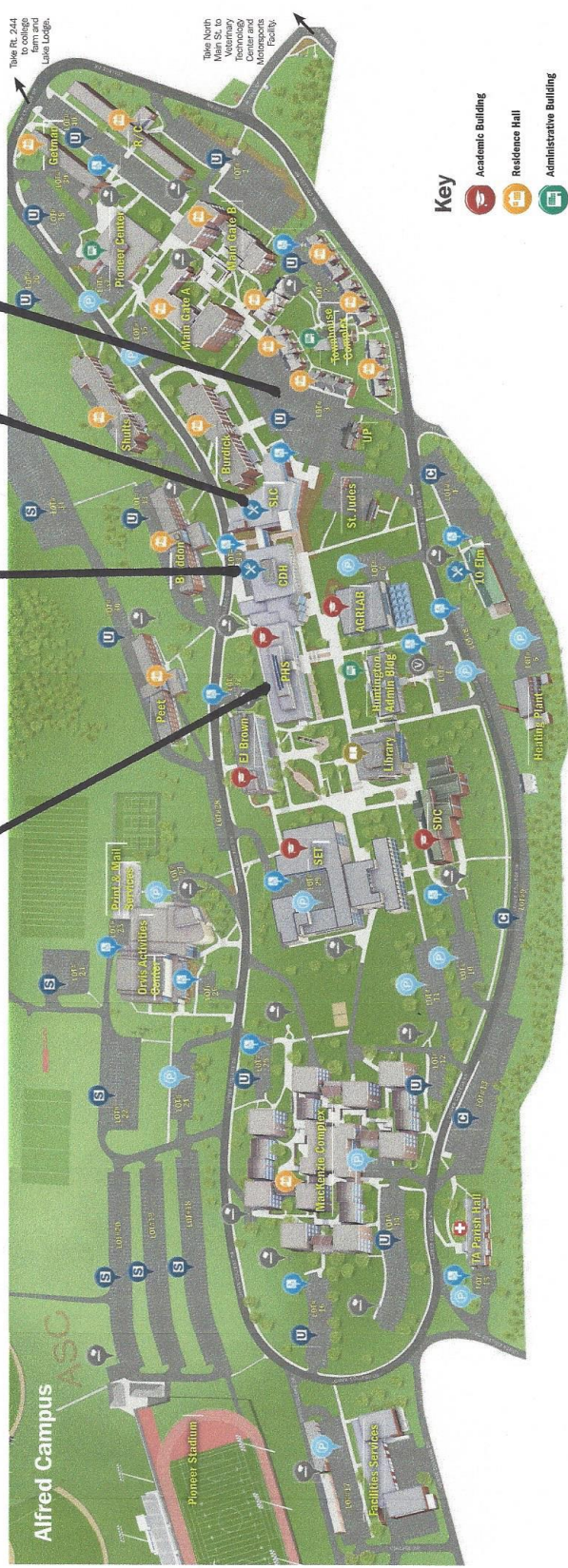
8E Physical Health Sciences (PHS) Building –Room 107

Sarah Lorya, Solar One

### **Solar One: Cool Activities for a Warming Planet**

How can we prepare our students to build a more energy-efficient and sustainable future? This session presents Green Design Lab, an innovative K-12 curricular guide for educators that uses hands-on activities to strengthen STEM skills. Workshop attendees will participate in interactive games and activities, learn about new solar initiatives in NYS, and engage in discussion on best practices for improving energy efficiency in school buildings.

Physical and Health Sciences  
Central Dining Hall  
Check-in Parking



- Key**
- Academic Building
  - Residence Hall
  - Administrative Building
  - Dining & Gathering Area
  - Library
  - Emergency Phone
  - Designated Smoking Area
  - Medical Services
  - Handicap Parking
  - Commuter Parking
  - Upperclassmen Parking
  - Student Parking (including commuters)
  - Faculty/Staff Parking
  - Visitor Parking

### Motorsports & Vet Tech Complex



- Agriculture Science (AGRIAB)**  
Agriculture & Veterinary Technology  
Student Records & Financial Services  
(PHS), Financial Aid, Student Accounts
- Central Dining Hall (CDH)**  
Aldrich Room  
Breakfast  
Student Dining Phone  
The Ball  
The Terrace
- EJ Brown Hall (BRVNH)**  
Business  
Court Reporting
- Engineering Technology Building (SET)**  
Architecture & Design  
Computer & Information Technology  
Computer Engineering Technology  
Computer & Information Technology  
Digital Media & Animation  
Mechanical & Electrical Engineering Technology
- Hinkle Memorial Library**  
Center for Teaching & Learning  
Computer Help Desk  
Computer Lab  
Technology Services  
Ladders for commuter students
- Hunter Student Development Center (SDC)**  
English & Humanities  
Math & Psychology  
Social & Behavioral Sciences  
Student Success Center  
Admissions  
Alumni Office  
Athletic Director  
Institutional Advancement  
Office of Academic Affairs  
Office of Student Affairs  
Provost
- Huntington Administration Building**  
Admissions  
Alumni Office  
Athletic Director  
Institutional Advancement  
Office of Academic Affairs  
Office of Student Affairs  
Provost
- Onis Activities Center (STUACT)**  
Cassipollia Auditorium  
Onis Strength and Conditioning Center  
Gym Pool
- Physical & Health Sciences (PHS)**  
Dean, School of Arts and Sciences  
Physical & Life Sciences  
Physical & Life Sciences
- Pioneer Center**  
Business Affairs  
Human Resources  
Pioneer Fitness Center
- Print & Mail Services**  
Mailroom  
Printing & Duplicating
- Student Leadership Center (SLC)**  
Campus Store  
International Center  
Center for Equity, Inclusion and Title IX  
University Police  
University Police, Available 365 days a year, 24 hours a day
- TA Parish Hall**  
Business Services  
Mind Spa
- Theta Gamma House (UP)**  
University Police, Available 365 days a year, 24 hours a day
- Townhouse Complex**  
Townhouse Community  
College Housing  
Residential Services
- 10 Elm**  
Pioneer House & Cafe  
Pioneer Hut