

## NYSED Science Update – Fall 2021

Office of Curriculum and Instruction Office of State Assessment







## NYS P-12 Science LEARNING STANDARDS

Welcome!

Please scan the QR code above to be taken to the NYSED Science page.

NYSED Science page

#### NEW: NYSED CURRICULUM AND INSTRUCTION SCIENCE PAGE



**Science Updates** 

**Science Learning Standards** 

Science Standards
Implementation Resources

Science Resources

Science Memos, Waivers, and Guidance

Parent Resources for Science

Science FAQ

Science Assessments

Science Student /Educator Awards and Scholarships

Science Associations

**Science Archive** 

#### Science

The New York State Education Department Office of Curriculum and Instruction provides guidance for the development and implementation of New York Steep P-12 Science Learning Standards. The purpose of this New York P-12 Science Learning Standards Implementation Roadmap is to as an analysis and analysis of the Statewide Strategic Plan for Science. This site is designed to assist the Institute of the current and the transition to the new science and ards. Resources can be adapted by stakeholders at the local, and state levels.



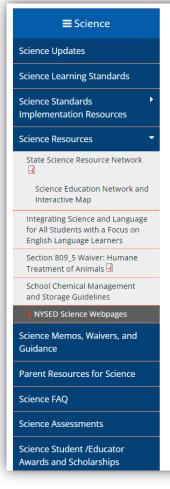
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#### Notable Resources

Here are some quick links to notable science resources.

- Virtual Laboratory Experiences and the 1,200 Minute Science Laboratory Requirement for the 2021-22 School Year (August 2021)
- Integrating Science and Language for All Students with a Focus on English Language Learners
- NYSP-12SLS Implementation Timeline (updated April 2021)
- NYSP-12SLS Parent Informational Flyer
- NYSP-12SLS State Science Resource Network

#### NEW: NYSED WEBPAGES RELEVANT TO SCIENCE EDUCATION



#### NYSED Webpages Relevant to Science Education

This webpage houses links to science resources from other offices within the New York State Education Department.

#### The Office of Career and Technical Education

The Office of Career and Technical Education (CTE) programs provide academic and technical instruction in the content areas of agriculture, business and marketing, family and consumer sciences, health sciences, trade and technical education, and technology education.

Integrated and Specialized Academics - As a part of NYSED-approved CTE program application process, schools
 can request approval to include integrated or specialized academic credit within a CTE program. Integrated and
 specialized courses are not required for NYSED program approval but are options that are available to
 approved programs.

If you have any questions please email: EMSCCTE@nysed.gov⊠

#### The Office of Early Learning

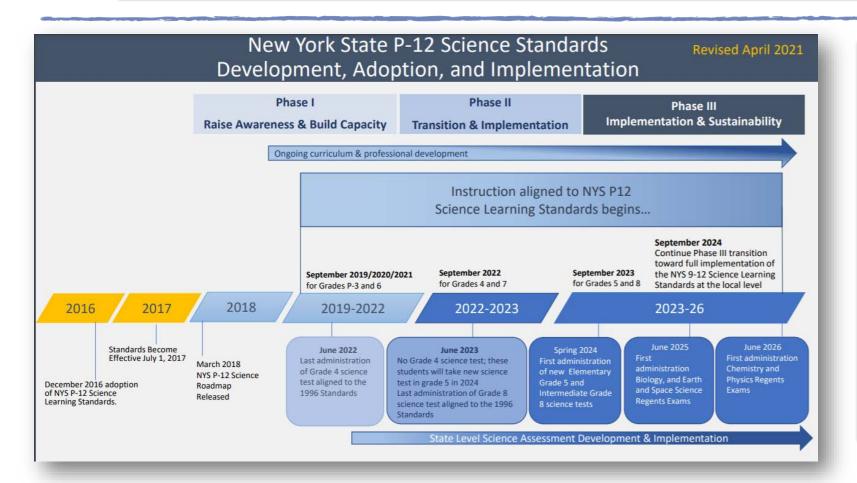
The Office of Early Learning (OEL) provides oversight and technical support to school districts in the development, implementation and evaluation of programs and policies related to educating students in prekindergarten to third grade that are aligned with the NYS Board of Regents Early Childhood Policy. OEL supports the Office of Curriculum and Instruction in ensuring the New York State P-12 Science Learning Standards, resource materials, and recommended best practices are developmentally appropriate for all students prekindergarten – Grade 3.

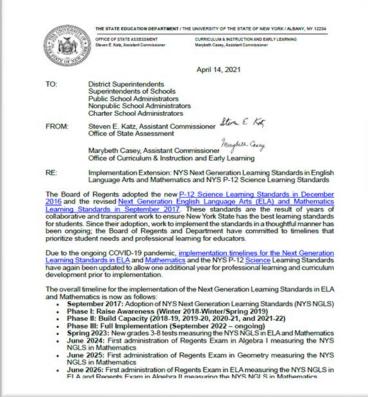
Resource Guides for School Success in Early Learning

The New York State Resource Guides for School Success in Early Learning are grade-specific resources (pre-k to grade 3) that consolidate all learning standards into one comprehensive document that provides a uniform format to make them easily accessible for teachers, specialists, administrators and parents. From a planning perspective, these documents highlight the importance of addressing children's development and learning across all developmental domains.



### Science Implementation Timeline Map (Updated April 2021)





NYS P-12 Science Learning Standards



#### NEW YORK STATE EDUCATION DEPARTMENT - NEW YORK STATE P-12 SCIENCE LEARNING STANDARDS IMPLEMENTATION ROADMAP

#### ROADMAP INTRODUCTION

The purpose of this New York State P-12 Science Learning Standards Implementation Roadmap is to serve as an at-a-glance guide for all stakeholder groups to facilitate attainment of the Statewide Strategic Plan for Science. This Roadmap is designed to assist in the transition to the new science standards as a resource that can be adapted by stakeholders at the local, regional, and state levels. Six key component areas as identified below, include a major goal supported by objectives and activities included in the Statewide Strategic Plan for Science. Effective standards implementation requires a system-wide commitment. The activities serve as a connection between the Statewide Strategic Plan for Science and this Roadmap is part of a larger comprehensive science standards systems implementation plan. Specific activities are suggested to be carried out through various actions by all stakeholder groups in a designated timeframe to create consistency across multiple levels over a multi-year, three-phase, implementation process. This roadmap is a tool that can be used to facilitate opportunities to engage every student in quality science education throughout their school career.

#### Outline of Contents

Component areas

	All Phases		Phase I		Phase II		Phase III
•	<u>Standards</u>	•	<u>Standards</u>	•	<u>Standards</u>	•	<u>Standards</u>
•	Curriculum	•	Curriculum	•	Curriculum	•	Curriculum
•	Professional Development to						
	Enhance Instruction		Enhance Instruction		Enhance Instruction		Enhance Instruction
•	Assessment	•	Assessment	•	Assessment	•	Assessment
•	Materials and Resources Support						
•	Administrative and Community						
	Support		Support		Support		Support

- o Stakeholder groups
  - New York State Education Department-NYSED
  - Professional Learning Networks, Organizations and Associations
    - Teacher Centers, Department of Environmental Conservation, New York State Cultural Center, Regional Information Centers, STEM Hubs, Professional Associations, Higher Education Institutions, Informal Science Institutions, Business and Industry Partners
  - Educational Systems Phase
    - Big 5/BOCES/Districts
- o Phases of implementation/PROPOSED Timeframes
  - Phase I: Raise Awareness and Build Capacity 07/2017-08/2019
  - Phase II: Transition and Implementation 09/2019-08/2023
  - Phase III: Implementation and Sustainability 09/2023-ongoing
- General Organization Structure of the Roadmap
  - Each component area is identified by a capital letter (A=Standards), with each objective identified by the component area letter and an objective number (A1=1st Standard objective). Each activity is identified by the key component area, the objective number and a lower-case letter (A1a=first activity within Standards component objective 1).
  - A checked box(es) identifies the phase(s) of implementation that an activity should be addressed by stakeholder groups. Activities may be addressed in more than one phase of implementation and may have different actions based on the stakeholder group and phase.

NYS
P-12
Science
Learning
Standards
Implementation
Roadmap

## SCIENCE High School Course Maps

- Aligned to new Regents examinations in science
- ➤ Aligned to the New York State P-12 Science Learning Standards
- >Includes:
  - Earth and Space Sciences
  - Life Sciences: Biology
  - Physical Sciences: Chemistry
  - Physical Sciences: Physics



STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

OFFICE OF CURRICULUM AND INSTRUCTION Room 860 EBA Phone: (518) 474-5922

#### Science High School Course Maps for <u>Physical Sciences: Physics</u> Courses that will Culminate in a Corresponding Regents Examination in Science

#### **Background**

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The New York State P-12 Science Learning Standards are based on guiding documents (<u>A Framework for K-12 Science Education I and the Next Generation Science Standards</u><sup>2</sup>) grounded in the most current research in science and scientific learning. They reflect the importance of every student's engagement with natural scientific phenomenon at the nexus of three dimensions of learning: Science and Engineering Practices, Disciplinary Core Ideas, and Cross-cutting concepts. Performance expectations are the way to integrate the three dimensions

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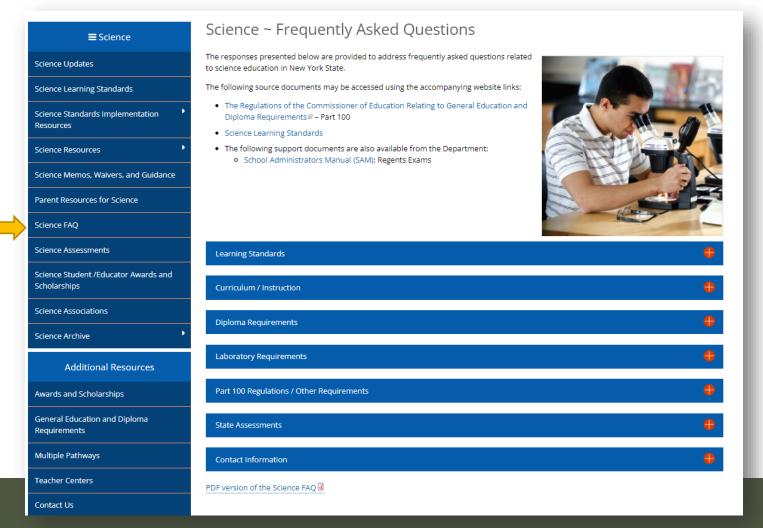
OFFICE OF CURRICULUM AND INSTRUCTION Room 860 EBA Phone: (518) 474-5922

Table L contains the recommended performance expectations for guiding curriculum programming and instruction within four high school science courses aligned to Regents examinations. Please note: no course sequences have been assumed in this model and the map does not preclude other performance expectations from being taught.



			Physical Sciences: Phy tructional sequences are not		
Topic Area	<u>PE #</u>	K-12 Science Education Framework: Scientific and Engineering Practices	K-12 Science Education Framework; Disciplinary Core Ideas	K-12 Science Education Framework: Crosscutting Concepts	For performance expectations that appear in more than one course. The specific concepts for the performance expectation within this course are outlined.
HS. Structure and Properties of Matter	HS-PS1-8.	Developing and Using Models	PS1.C: Nuclear Process	Energy and Matter	Scale of energy released.
HS. Forces and Interactions	HS-PS2-1.	Analyzing and Interpreting Data	PS2.A: Forces and Motion	Cause and Effect	

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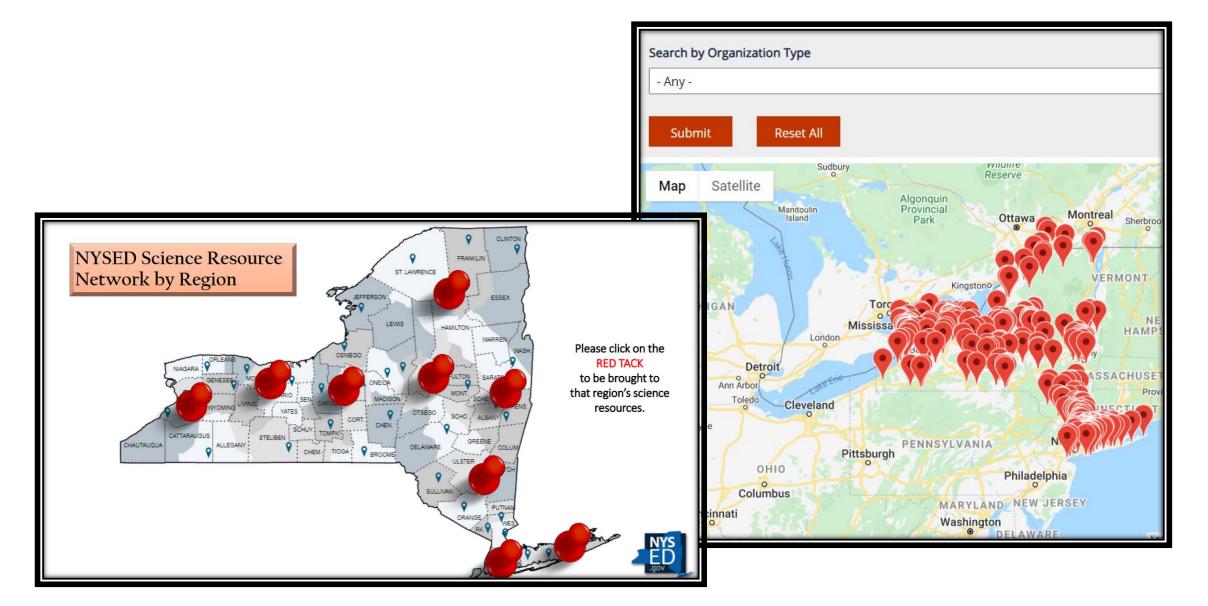


## NYSED Science Frequently Asked Questions

Please visit the updated

NYSED Science Frequently Asked Questions page at

http://www.nysed.gov/curriculum-instruction/science-frequently-asked-questions



#### NYSED STATE SCIENCE NETWORK UPDATE

## A Parent's Guide to the New York State P-12 Learning Standards



#### A Parent's Guide to the New York State P-12 Science Learning Standards

What are the New York State P-12 Science Learning Standards?

The NYS P-12 Science Learning Standards are the educational goals for all of New York State's students from prekindergarten through Grade 12 in Science.

#### What is Science and why is it important for my child?

Science is the scientific approach to understanding the natural world. Among these are a demand for explanations supported by claims and evidence that are testable. Branches of P-12 science education include: life science, physical science, as well as Earth and space sciences.

Over the past several decades, streams of research studies, reports, policies, and publications have documented the benefits of students' science education to better prepare them for the workforce and college pathways. Careers in Science, Technology, Engineering, and Mathematics (STEM) will only grow in the next decade, making it essential for accessibility to equitable learning opportunities for all students to excel.

#### When will the NYS P-12 Science Learning Standards be implemented?

The implementation timeline can be found at found on the Science Curriculum and Instruction website.

#### How can I learn more?

You can learn more about the NYS P-12 Science Learning Standards by talking to your child's teacher or visiting our NYSED web site.



Scan the QR code to access this flyer on the NYSED web site for live links.



#### Parent Resources

Supporting Learning at Home

- ⇒ New York State Science Standards Implementation Resources
- ⇒ New York State Parent Teacher Association (PTA) Parent Resources
- Resources for Parents of Students with Disabilities
- Multilingual Learner/English Language Learner Parent Resources
- New York State Education Department Office of Curriculum & Instruction Email: EMSCURRIC@nysed.gov

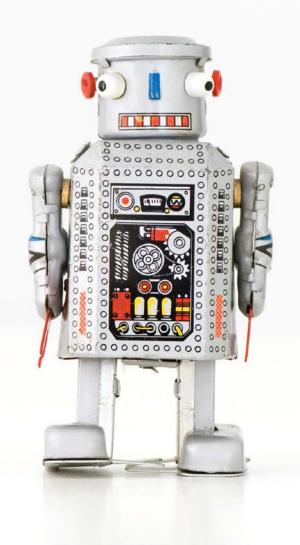
## Science Turnkey Guides (IN DEVELOPMENT)

An Introduction to the New York State P-12 Science Learning Standards

An Introduction to the NYSED Science Page and Resources

An Introduction to the Integrating Science and Language for All Students with a Focus on English Language Learners series





## In Development

NYSED Science

Quick Reference Guide to the

New York State P-12

Science Learning Standards

### Collaborative Partners



New York State
Teacher Centers



S/CDN Science
Statewide
Framework Group



New York State
Science Education
Consortium

## Collaborative Partners



NYSED SCAP

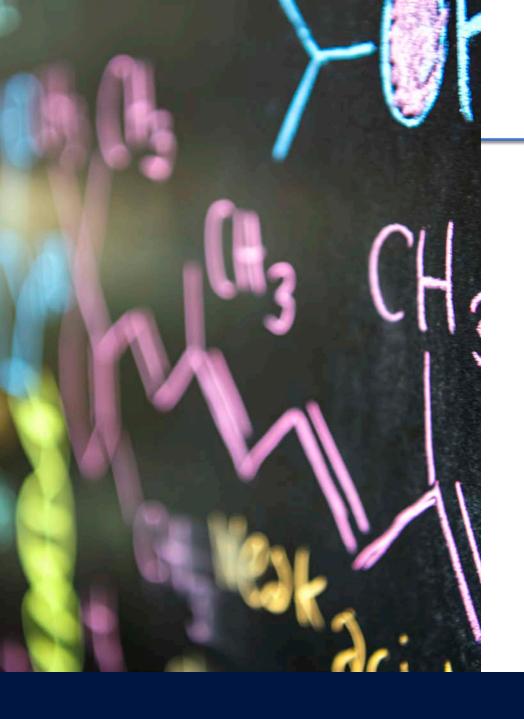
Science Content Advisor Panel



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## Questions from the Field

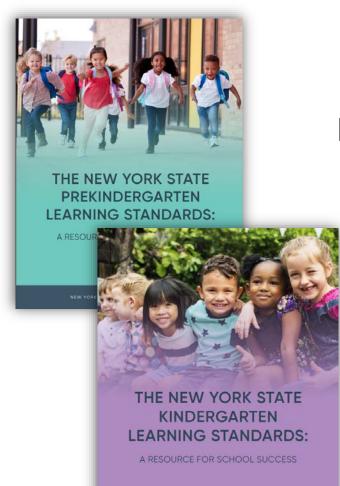
Q: Is it acceptable to save laboratory reports electronically for the 2020-2021 school year?

A: It is acceptable for districts to house and for students to submit electronic laboratory reports, as opposed to paper, for Regents science classes. Please make sure you are following any other requirements for laboratory retention as dictated by the Office of State Assessment.



## Office of Early Learning

## Prekindergarten-Grade 3 Standards Resources

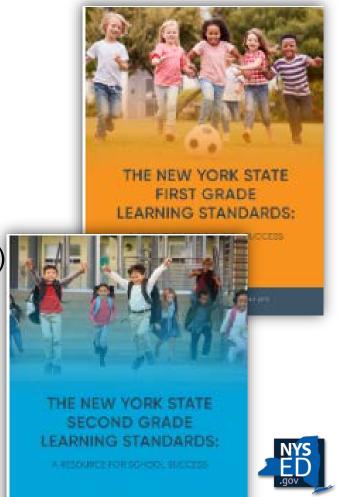


Consolidate all learning standards for PK-3 students into one resource

#### Include:

- Approaches to Learning
- Social Emotional Learning Benchmarks
- Model Interdisciplinary Unit of Study (PK)
- Unit Planning Template (K-3)

Early Learning Standards Resources



## **PAEMST**

### 2021-2022 PAEMST Award Cycle K-6th grade educators

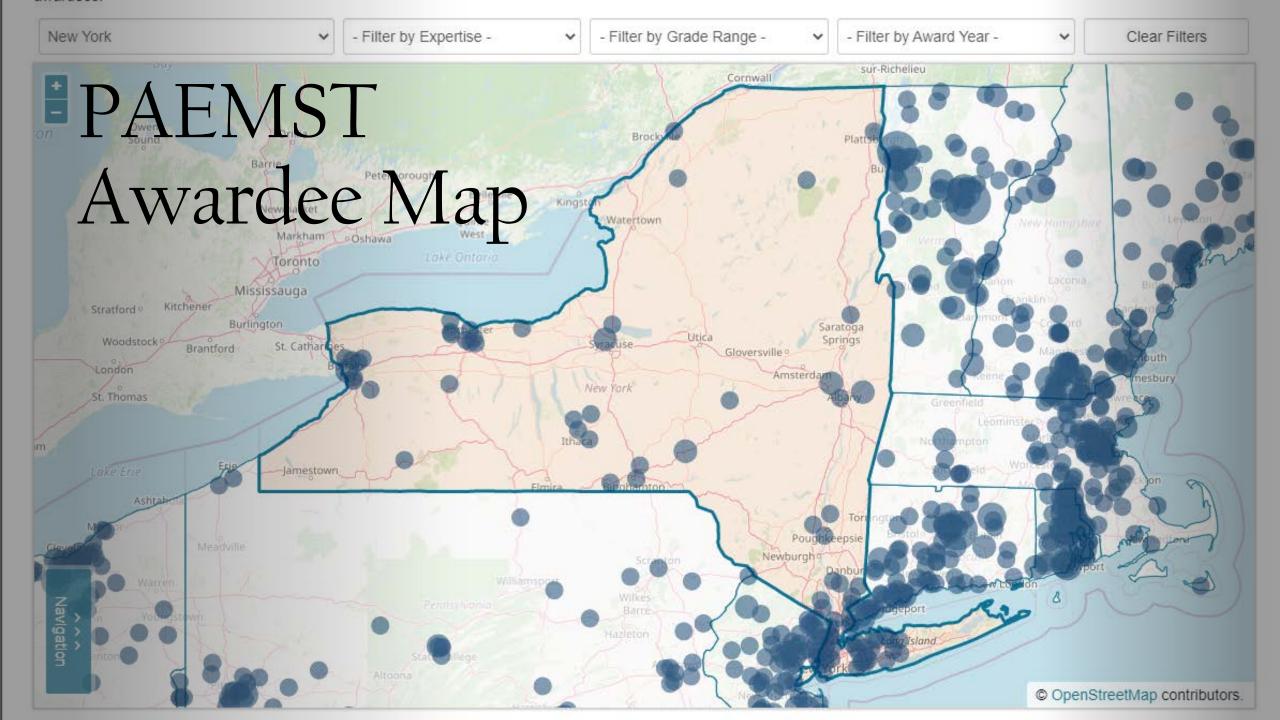
Nominations open: August 1<sup>st</sup>, 2021

The deadline to apply: February 6th, 2022.

The Nation's Highest Honors for Teachers of Science, Technology, Engineering, and Mathematics (STEM, including Computer Science)

Please visit <u>www.paemst.org</u> for more information.





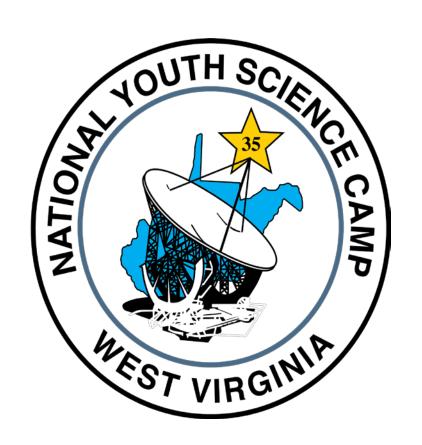
## PAEMST ANNOUNCEMENT

# Congratulations to our newest PAEMST State Finalists

NEW YORK 2021
Presidential Award for
Excellence in Math and
Science Teaching
State Finalists

- Kristen Drury
- Dr. Sarah English
- Dr. Brittany Kozlenko

## National Youth Science Camp



The National Youth Science Camp (NYSCamp) is a residential science education program for young STEM enthusiasts the summer after they graduate from high school.

To be selected, you must be a graduating high school senior in the United States (Two each from every state and Washington, D.C.) and students 16-18 years of age in selected other countries.

Students who are selected will attend the NYSCamp FREE of charge.

The 2022 NYSCamp will be held in Summer 2022; the selected must be able to attend the entire program - no exceptions.

DEADLINE to be announced.

For more information about the program, please visit the NYSCamp's web site at <a href="http://www.nyscamp.org">http://www.nyscamp.org</a> or our <a href="http://www.nyscamp.org">NYSED Science Award and Scholarships page</a>.

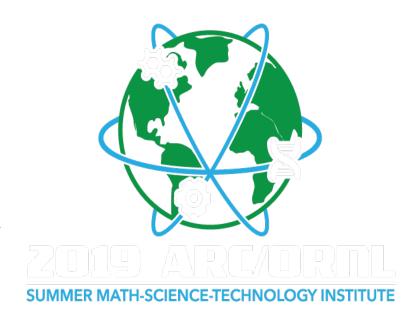
## ARC/ORNL Summer 2022 Math-Science-Technology Institute for STEM Teachers and High School Students and STEM Academy for Middle School Students

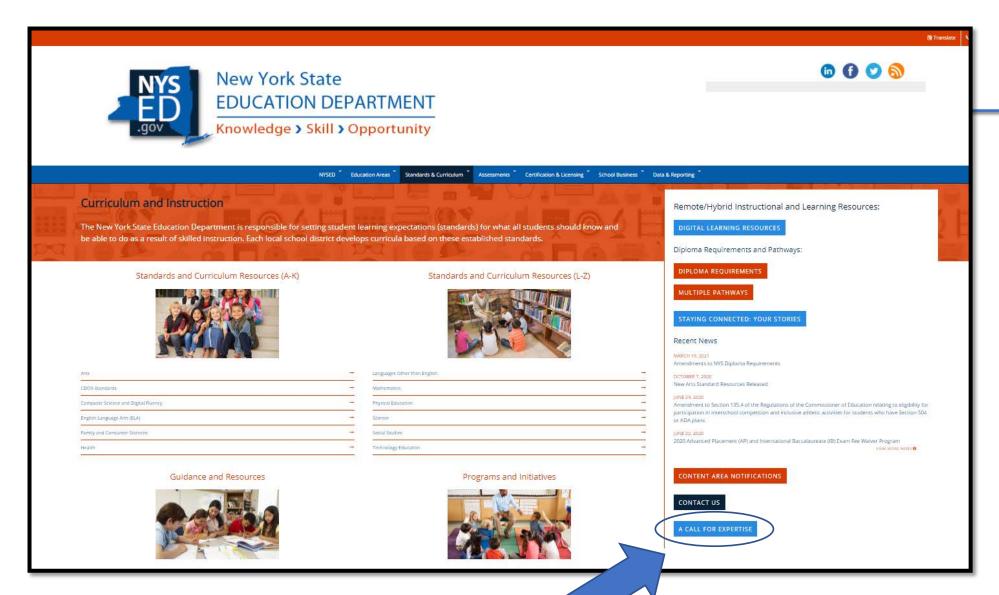
The Appalachian Regional Commission (ARC), in collaboration with the Oak Ridge National Laboratory (ORNL), is sponsoring a two-week residential hands-on learning institute focusing on math, science, and technology for high school students and teachers, and middle school students.

#### Opportunities include:

- ➤ High School Summer Math-Science-Technology Institute for high school students and teachers.
- ➤ Middle School Summer Science Academy for middle school students.

Additional information is available on the <u>ARC/ORNL web site</u> and or our <u>NYSED Science Awards and Scholarships</u> page.





### A CALL FOR EXPERTISE



## Content Area Notification Service

Join our Notification Service for news and updates from the Office of Curriculum and Instruction.















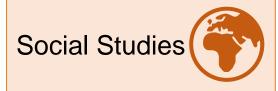


















Please send question regarding science curriculum or standards to

ScienceStandards@nysed.gov





## Office of State Assessment Update



## SCIENCE LABORATORY EXPERIENCE & REQUIREMENTS

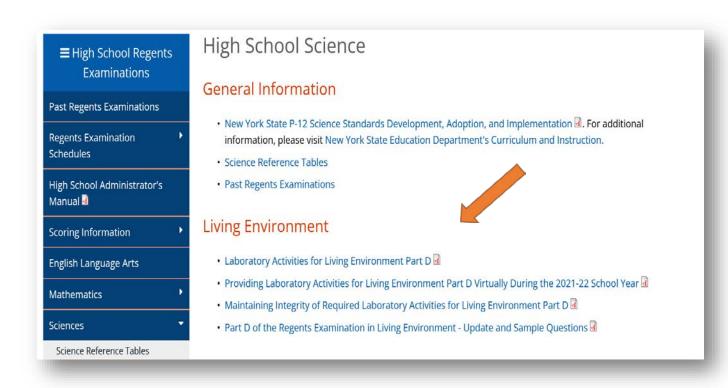


This flexibility is **not** extended to the 2021-22 school year, however, the Board of Regents has extended the period of time during which the 1,200-minute laboratory requirement may be met "through a combination of hands-on and simulated laboratory experience" where "such <u>hands-on</u> laboratory experience cannot be met as a result of the COVID-19 crisis."

Students who completed a course culminating in a Regents Examination in science during the 2019-20 or 2020-21 school year, including the 2020 and 2021 summer sessions, but were unable to meet the 1,200-minute laboratory requirement due to the COVID-19 crisis, continue to be eligible for admission into future test administrations for that specific Regents Examination.



#### Providing Laboratory Activities for Living Environment Part D Virtually During the 2021-22 School Year



Permission is hereby granted to reproduce, electronically (i.e., scanned) if necessary, the Student Laboratory Packet and the Student Answer Packet in limited quantities for local use in instruction.

The Teacher's Guides are not to be provided to students and should not be reproduced electronically or shared virtually.



#### Regents Examination Schedule for January 2022

TUESDAY, January 25	WEDNESDAY, January 26	THURSDAY, January 27	FRIDAY, January 28	
9:15 a.m.	9:15 a.m.	9:15 a.m.	9:15 a.m.	
English Language Arts	Algebra I Physical Setting/Physics*	Global History and Geography II	Physical Setting/Earth Science Physical Setting/Chemistry	
1:15 p.m.	1:15 p.m.	1:15 p.m.	Uniform Admission	
Living Environment	Geometry	Algebra II	Deadline  Morning Examinations: 10:00 a.m.  Afternoon Examinations: 2:00 p.m.	

#### Regents Examination Schedule for June 2022

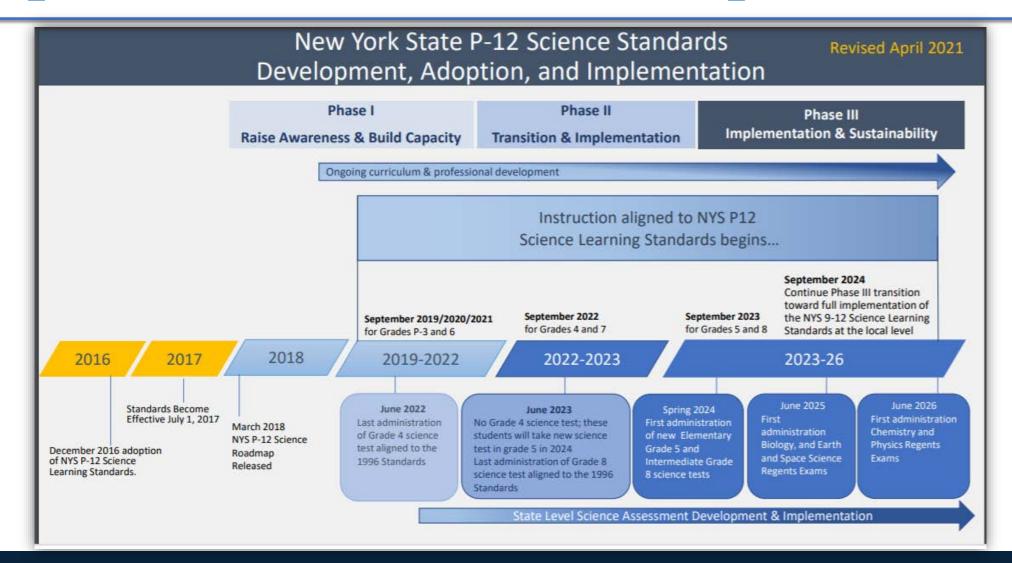
WEDNESDAY, June 1	WEDNESDAY, June 15	THURSDAY, June 16	FRIDAY, June 17	MONDAY, June 20	TUESDAY, June 21	WEDNESDAY, June 22	THURSDAY, June 23	FRIDAY, June 24	
9:15 a.m.	9:15 a.m.	9:15 a.m.	9:15 a.m.		9:15 a.m.	9:15 a.m.	9:15 a.m.		
U.S. History and Government (Framework)*	English Language Arts	Algebra I	Global History and Geography II	Juneteenth Holiday Observed	Geometry  World Language Assessment suggested date/time: Locally developed Checkpoint A Exams	Algebra II	Physical Setting/Physics	RATING DAY	
	1:15 p.m.	1:15 p.m.	1:15 p.m.		World Language Assessment	Uniform	Admission Deadli	ne	
	Living Environment	Physical Setting/Chemistry	Physical Setting/Earth Science		suggested date/time: Locally developed Checkpoint B Exams	Morning Ex	g Examinations: 10:00 a.m. on Examinations: 2:00 p.m.		

#### Regents Examination Schedule for August 2022

TUESDAY, August 16	WEDNESDAY, August 17		
8:30 a.m.	8:30 a.m.		
Algebra I English Language Arts	U.S. History and Government (Framework)  Physical Setting/Earth Science  Physical Setting/Chemistry		
12:30 p.m.	12:30 p.m.		
Global History and Geography II Algebra II	Geometry Living Environment		

#### Regents Examination Schedules for January, June, & August 2022

## Updated Science Timeline Map



## New Assessments

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Spring 2024 Elementary Level Science Test

Intermediate Level Science Test



June 2025 Regents Exam in Earth & Space Sciences

Regents Exam in Biology



June 2026 Regents Exam in Chemistry

Regents Exam in Physics

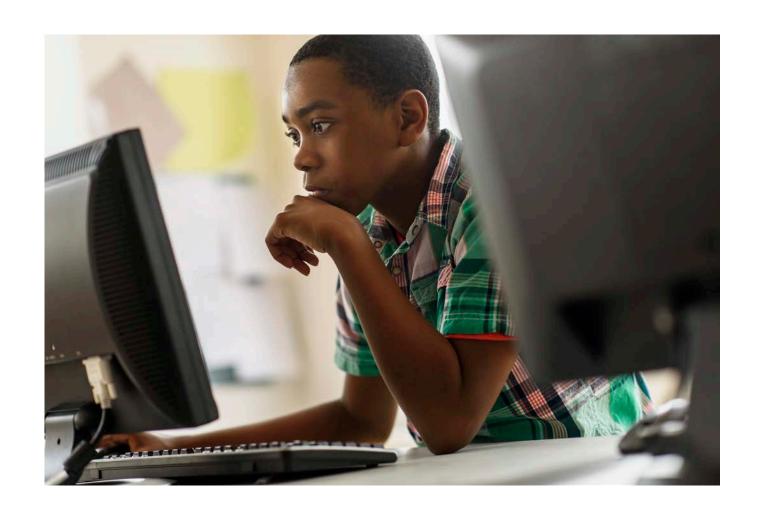
<u>Updated (April 2021) Assessment Time-Line for NYS P-12 Science Learning Standards</u>

## Computer Based Testing (CBT) for 5 & 8 Science Field Testing

 New contract with Questar for 3-8 field testing, which will include 5 & 8 Science

Contract started July 1, 2021

- NYSED's hope is to roll out sample items for students to practice CBT
  - These questions have been written by NYS teachers who have undergone our new Item Writing Training and are familiar with CBT items and the structure of them
  - Kick off meeting was in mid- August with Questar





## Projected Release Dates for Resource Materials

#### **Elementary & Intermediate Science**

Performance Level Descriptions (PLDs): September 2020

OSA's Elementary- and Intermediate-level Science

Webpage

- Claims, Evidence and Additional Materials to follow in the coming 2021-22 School Year
- We expect to follow similar plans for the release of Regents Exam development materials, relative to their first administration dates.

## Grade Level and Domain Status Update



## Elementary and Intermediate Science:

- Three Dimensional items are being written by NYS educators for field testing (including CBT)
- Curriculum embedded Performance Investigations are being crafted by NYS educators



Biology, Earth and Space Sciences:

 Domain Analysis and Performance Level Descriptions (PLDs) are being workshopped by NYS educators

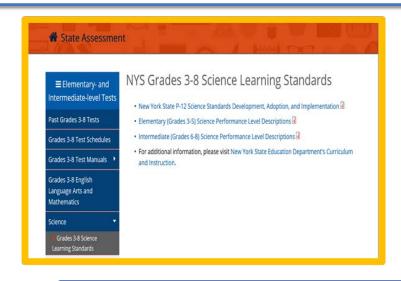


Chemistry, Physics:

 Claims are being workshopped by NYS educators and Evidence will be started the Fall of 2021



## Release of the ELS and ILS Performance Level Descriptions (PLDs)



#### NYS Level 4

Students performing at this level **excel** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **more than sufficient** for the expectations at this grade.

#### NYS Level 3

Students performing at this level are **proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **sufficient** for the expectations at this grade.

#### NYS Level 2

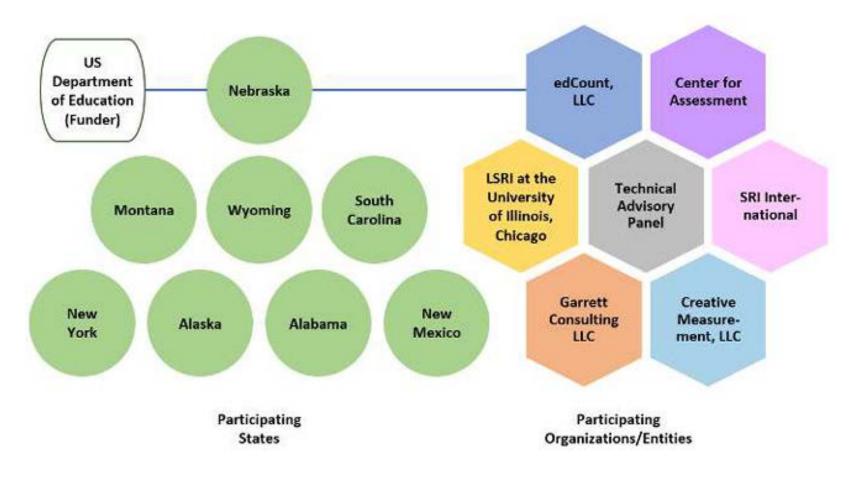
Students performing at this level are **partially proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered partial but insufficient for the expectations at this grade. Students performing at Level 2 are considered on track to meet current New York high school graduation requirements but are **not yet proficient** in Learning Standards at this grade.

#### NYS Level 1

Students performing at this level are **below proficient** in standards for their grade. They may demonstrate **limited** knowledge, skills, and practices embodied by the Learning Standards that are considered **insufficient** for the expectations at this grade.

Topic and PE	NYS Level 4	NYS Level 3	NYS Level 2	NYS Level 1
MS History of Earth MS-ESS1-4	Construct a scientific explanation, based on evidence from multiple sources, for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history, and determine patterns of relative age for rock strata, fossils and past geologic events.	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	Given a scientific explanation, use evidence from rock strata to determine that rock formations and the fossils they contain are used to establish relative ages of major events in Earth's history.	Given evidence from rock strata, identify the explanation, from those provided, that the analysis rock formation and the fossils they contain are used to establish relative ages of major events in Earth's history.





Stackable,
InstructionallyEmbedded,
Portable Science
(SIPS)
Assessments

# SIPS Deliverables Timeline

Deliverable	Status	Final Delivery Date
Task 1: Project Planning and Research		
SIPS Project Website	Complete	Maintained 5 years
Project Theory of Action	Complete	post-project March 2021
SIPS Web-based Platform Specifications	Not Started	September 2023
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Task 2: Claims, Measurement Targets, PLDS and Curricular Pla		
Claims, Measurement Targets, Policy and Range PLDs (to be revised post-pilot in year 3)	In Progress	September 2023
Curricular Planning Tools and Templates: NGSS	In Progress	September 2023
Bundles/Flowcharts, Student Profiles, UbD Unit Map		
Template, PAD Assessment Templates, UbD Lesson Template		
(to be revised post-pilot in year 3)		
Task 3: Prototype Curriculum Framework		
UbD Year-long Model Courses (4 units each at grade 5 and 8)	In Progress (Unit 1)	September 2023
(to be revised post-pilot in year 3)		
End-of-Unit (Modular) SIPS Assessments (4 each at grade 5	In Progress (Unit 1)	September 2023
and 8) (to be revised post-pilot in year 3)		
Process Documentation (explanation of design model and	Not Started	December 31, 2021
UbD, PAD, and UDL approach; guidance for replication and		
use)		
Task 4: Classroom Assessment Development Workshops		
Instructionally-embedded Classroom Assessment	Not Started	November 2021
Development Workshop #1		
Instructionally-embedded Classroom Assessment	Not Started	March 2022
Development Workshop #2		
Instructionally-embedded Classroom Assessment Tasks (to be	Not Started	September 2023
revised post-pilot in year 3)		
Task 5: Pilot Study of Curriculum Prototypes and Common Asse	essments	
Pilot Study Plan and Timeline	Not Started	November 2021
Pilot Materials and Data Collection Tools	Not Started	June 2022
Pilot Study Completion	Not Started	April 2023
Analysis and Summary of Pilot Results	Not Started	September 2023
Task 6: Project Evaluation, Dissemination, and Reporting		
	Not Charles	September 2023
Dissemination Plan	Not Started	September 2023



# Educator Opportunities

Information about opportunities to participate in test development can be found at:

NEW YORK STATE
EDUCATION
DEPARTMENT
TEACHER
PARTICIPATION
OPPORTUNITIES

### Contact us!





NYSED Curriculum and Instruction Website: www.nysed.gov/curriculum-instruction



NYSED Science website: <a href="http://www.nysed.gov/curriculum-instruction/science">http://www.nysed.gov/curriculum-instruction/science</a>



NYSED Office of Assessment website: <a href="http://www.nysed.gov/state-assessment">http://www.nysed.gov/state-assessment</a>



Questions pertaining to science curriculum and instruction: <a href="mailto:emscurric@nysed.gov">emscurric@nysed.gov</a>



Questions pertaining to science assessment: emscassessinfo@nysed.gov



NYSED's Office of Curriculum & Instruction (518) 474-5922

www.nysed.gov/curriculuminstruction

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NYSED's
Office of State Assessment
<a href="http://www.nysed.gov/state-assessment">http://www.nysed.gov/state-assessment</a>

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Associate in Instructional Services –
Science

Megan.Kinmartin@nysed.gov

