

**Thursday 9:00**

**PIMSER: Developing Classroom Assessments for NGSS**

Length: 7  
**Session 1**

Susan Mayo, Diane Johnson, Patti Works  
G

**Patterson A**  
Lecture  
All Sciences

During this session, participants will examine the characteristics of NGSS-aligned tasks, discuss evidence-centered design and construct monitoring, and practice generating a grade-level specific assessment task.

**Thursday 1:00**

**"Buddy-Up" to NGSS Through Companion Lessons**

Length: 3  
**Session 2**

Reeda Hart, Carrie Holloway, Lila Brindley  
P E

**Patterson D**  
Hands-on  
Interdisciplinary

A set of hands-on companion lessons will be highlighted from each of the major science areas. One lesson will focus on NGSS Science Practices while the other will focus on Engineering, with a common thread of Content. Free CD of lesson plans!

**Thursday 1:00**

**KEA Cadre: Kentucky Core Academic Standards for Science**

Length: 3  
**Session 3**

Candace Edmonds  
E M H

**Patterson C**  
Lecture  
Biology/Life Science Environmental/Earth Physical Science

The KEA KCAS for Science training includes an overview of the new science standards. Participants will learn how to deconstruct a standard and develop "I Can" statements for student objectives, plus knowledge and skills to advocate for appropriate implementation of the standards in their schools.

**Thursday 1:00**

**Teaching Wave Energy Concepts**

Length: 3  
**Session 4**

Tom Tretter, Lee Ann Nickerson, Scott Schneider  
E M H

**Patterson B**  
Hands-on  
Interdisciplinary

The new NGSS standards in PS4 includes a new topic of teaching students about electromagnetic waves and their uses in modern digital communication systems. The session explores a variety of teaching strategies and resource for teaching this complex topic in age-appropriate fashion spanning grades 4 - 12.

**Thursday 6:00**

**Make & Take Session for Elementary**

Length: 2  
**Session 5**

Clara Fulkerson  
P E

**Patterson A**  
Make & Take  
All Sciences

Two hour session during which participants will be engaged in hands-on activities based on the NGSS/KCAS for Science, grades K-5. Give-aways and some take-away materials will be included.

**Thursday 6:00**

**Make & Take Session for High School**

Length: 2  
**Session 6**

Lisa Devillez, Josh Underwood  
H

**Patterson D**  
Hands-on  
Interdisciplinary

Simple hands-on activities with minimal resources can be used to strengthen students' skills in data collection and analysis. Participants will leave with specific lessons for immediate use and an approach for adapting their own activities in the future.

**Thursday 6:00**

**Make & take Session for Middle School**

Length: 2  
**Session 7**

Grant Felice  
M

**Patterson B**  
Make & Take  
Interdisciplinary All Sciences

Teachers will construct and learn to use science manipulatives that can be engineered by students to measure and accumulate data in class. Fun Session!

<b>Friday</b>	<b>8:00</b>	<b><u>Use the EQulP Rubric to Evaluate Materials for NGSS</u></b>	
Length: 2		Dr. Joe Krajcik	<b>Thoroughbred 4</b>
<b>Session 8</b>		G	Hands-on Interdisciplinary

How can teachers and administrators decide if curriculum materials focus on 3-dimensional learning as required by the NGSS? The EQulP rubric is designed for this intent, but educators need to know how to use this tool.

<b>Friday</b>	<b>8:00</b>	<b><u>NGSS Peer Learning Teams</u></b>	
Length: 2		Tricia Shelton, Dr. Kimberly Haverkos	<b>Thoroughbred 2</b>
<b>Session 9</b>		Melissa Stolz	Lecture Interdisciplinary
		G	

NGSS Implementation Teacher Leaders share information and strategies for supporting K-12 teachers in the NGSS Implementation process. Strategies for creating immersion and reflection experiences for personalized learning around the new standards.

<b>Friday</b>	<b>8:00</b>	<b><u>Scale-based Visualizations of the Atom</u></b>	
Length: 1		Dr. Wilson Gonzalez-Espada	<b>Thoroughbred 5</b>
<b>Session 10</b>		M H	Hands-on Physical Science

The small size of atoms makes them very hard to visualize and compare with normal-sized objects. Atomic models can complicate students' understanding of atomic scale. Participants will use a lobed ball, representing a nucleus, to illustrate proper atomic scales.

<b>Friday</b>	<b>8:00</b>	<b><u>Forms of Energy and Energy Transformations</u></b>	
Length: 1		Dr. Sheila Yule, Tyler Cvitkovik, Karen Reagor	<b>Thoroughbred 6</b>
<b>Session 11</b>		E M H	Hands-on Physical Science Interdisciplinary

Participants will explore forms of energy and energy transformations while cycling through six stations that each focus on a different transformation.

<b>Friday</b>	<b>8:00</b>	<b><u>Strategies for Improving Science Vocabulary</u></b>	
Length: 1		Jackie Allen	<b>Thoroughbred 7</b>
<b>Session 12</b>		M H	Hands-on Interdisciplinary

Modeling techniques to improve your middle or high school students science vocabulary using strategies from Harvey Silver, TPT and others.

<b>Friday</b>	<b>8:00</b>	<b><u>Curriculum Mapping with the NGSS</u></b>	
Length: 1		Patrick Goff, Nathan Lockhart	<b>Thoroughbred 3</b>
<b>Session 13</b>		Nathan Lockhart	Lecture Interdisciplinary
		M	

This session will detail how a Design and Development team of Fayette County middle school teachers laid out the curriculum maps using the NGSS. We will explain the thought process and our ongoing PD options for teachers.

<b>Friday</b>	<b>8:00</b>	<b><u>Understanding the Standards</u></b>	
Length: 2		Laurie Babbs, Suzanne Wadsworth	<b>Thoroughbred 8</b>
<b>Session 14</b>		G	Hands-on Interdisciplinary

Attendees will participate in an activity in order to become familiar with the basic layout of the Next Generation Science Standards document. This session will be presented by KEA NGSS trainers.

**Friday 8:00 The New National Board Process and You**

Length: 1 **Josh Underwood, Amanda Underwood** **Patterson A**  
**Session 15** G Lecture Interdisciplinary

Have you avoided National Board Certification because of the time commitment an/or expense? Come learn how NB has reformatted the process and fees to make it better for candidates. Also learn about support available for you during the certification process.

**Friday 8:00 Close Reading in Science**

Length: 1 **Viola Randall** **Patterson B**  
**Session 16** H Lecture Interdisciplinary

When asked to read a text, do your students highlight everything, just search for the answers, or scribble responses without remembering the material? If so, strategies will be shared to help your students learn how to highlight important text, make meaningful notes and read complex texts with confidence.

**Friday 9:10 Engaging in Argument from Evidence: How to Frame Arguments**

Length: 1 **Richard DeLong** **Thoroughbred 3**  
**Session 17** G Hands-on Interdisciplinary

Experience and activity that will model how to use the science and engineering practice of Engaging in Argument from Evidence in any classroom. Participants will use notebook strategies and frame a scientific argument.

**Friday 9:10 The Flow of Energy: It's Electric**

Length: 1 **Dr. Sheila Yule, Tyler Cvitkovik, Karen Reagor** **Thoroughbred 6**  
**Session 18** G Hands-on Interdisciplinary

Participants will see how electricity is generated, using simple and easy to find props. The activity covers forms and sources of energy as well as energy transformations.

**Friday 9:10 Integrative STEM Learning**

Length: 1 **Dr. Kevin Stinson** **Thoroughbred 5**  
**Session 19** P Hands-on Interdisciplinary

Engage in disciplinary core ideas from the Next Generation Science Standards and learn how to incorporate Science and Engineering Practices and Crosscutting Concepts. Learn how science, technology, engineering and mathematics can be integrated as part of your STEM school model.

**Friday 9:10 Literacy in Science**

Length: 1 **Hallie Hundemer-Booth, Christine Duke** **Patterson A**  
**Session 20** G Lecture Interdisciplinary

In this session, teachers will understand how Performance Based Assessment is a natural fit in the NGSS classroom as a formative or summative connection.

**Friday 9:10 Enhancing Undergraduate Competency Through STEM**

Length: 1 **Jessica Gilreath, Blakeley England** **Patterson B**  
**Session 21** **Melinda Wilder** Demonstration Interdisciplinary  
G

This session will describe the benefits for undergraduate students involved in planning and implementing environmental STEM lessons with K-12 students. These students will explain how their participation in such a program has helped prepare them for their future career.

**Friday 9:10**

**Hands-On Human Ecology for the Next Generation**

Length: 1

April Haight

**Patterson C**

**Session 22**

M H

Hands-on  
Environmental/Earth Interdisciplinary

Discover innovative activities for the NGSS that explore population growth, carrying capacity, human impacts on the environment and paths to sustainability. Receive a CD-ROM of lesson plans.

**Friday 9:10**

**Engineering Practices for the Classroom**

Length: 2

Rachel S. Beck

**Patterson D**

**Session 23**

P E

Hands-on  
Interdisciplinary

Engineering practices do not always mean building something. Asking questions and finding solutions is the first step to critical thinking in the classroom. Discover cheap and useful methods for bringing engineering into any subject.

**Friday 9:10**

**Program Reviews: Don't Run and Hide**

Length: 1

Elizabeth Roland, Leah Manley

**Thoroughbred 7**

**Session 24**

H

Hands-on  
Physical Science

Struggling to incorporate program review activities with your new science standards? We will share selected content based materials aligned to NGSS for astronomy, physics and chemistry that also contributed to the program review in Humanities, Writing and Health.

**Friday 9:10**

**Designing Instruction to Meet the NGSS Through PBL**

Length: 2

Tim Schneider, Lora Hillerich

**Patterson E**

**Session 25**

E M H

Lecture  
Interdisciplinary

The NGSS requires three dimensional teaching that has students learning not only WHAT we know in science but HOW we know it. During this session, participants will be introduced to project-based learning and provided with a wealth of resources for use in developing a PBL unit.

**Friday 10:20**

**Do You Hear What I Hear?**

Length: 1

Emily Miller

**Thoroughbred 5**

**Session 26**

P E

Hands-on  
Physical Science

Hands-on activities, investigations and experiences allow students to explore science. Discussions should be used to both elicit prior knowledge and generate questions, as well as make sense of those investigations. This session will model a lesson on sound.

**Friday 10:20**

**The Power of the Personal Learning Network**

Length: 1

Tricia Shelton

**Thoroughbred 4**

**Session 27**

G

Lecture  
Interdisciplinary

Find out how to leverage the power and potential of digital media to personalize your learning experience, share your work to help others, and make great connections to support your growth as a teacher.

**Friday 10:20**

**Integrating Biology and Math with Engineering**

Length: 1

Douglas Potts, Dr. Robin Cooper

**Thoroughbred 2**

**Session 28**

M H C

Lecture  
Biology/Life Science

See new material designed to help students and teachers in grades 6-12 to fulfill the goals of NGSS by integrating biology and math with engineering design and models. Focus is on real world problems in the area of stereology (3D objects viewed in 2D).

**Friday 10:20**

**The Talking Pop Bottle**

Length: 1

Scott Heydinger

Thoroughbred 6

**Session 29**

E M H C

Lecture

Physical Science

Learn how to teach basic principles of electricity and magnetism and WOW you students with simple real world demonstrations of how a speaker, motor, phone company and radio stations work; and how to clear up common confusion about how circuits really work.

**Friday 10:20**

**CCSS + NGSS = Science Fair Projects**

Length: 1

Ronda K. Fields, Ashley Fields

Patterson A

**Session 30**

M H

Lecture

Interdisciplinary

NGSS and CCSS are practically telling us to do science fair projects! Louisville regional Science & Engineering Fair Co-Director shares strategies and timeline for projects and possible competitions.

**Friday 10:20**

**Learning Culture and Formative Assessment**

Length: 1

Stephanie Harmon

Thoroughbred 7

**Session 31**

H

Lecture

Interdisciplinary

Students and teachers need to know where the student is in the learning in order for the student to be successful. A high school teacher will share how she develops a learning culture where students use formative assessments to track their own learning.

**Friday 10:20**

**Naturally Inquisitive**

Length: 2

Christine Duke, Melody Cooper

Thoroughbred 8

**Session 32**

P

Hands-on

Interdisciplinary

Children are born naturally inquisitive. Come engage in activities, as well as learn about questioning strategies that foster this innate characteristic.

**Friday 10:20**

**Little Scientists in a Big Scientist World**

Length: 1

Dr. Jennifer McCain, Dr. Kitty Hazler

Thoroughbred 3

**Session 33**

Dr. April Miller

Hands-on

P

Interdisciplinary

Engage in easy-to-deliver activities for a preschool or elementary classroom to meet NGSS's emphasis on process skills where students are expected to investigate and analyze at an earlier age. Pedagogy will also be discussed as it relates directly to preschool/early elementary students.

**Friday 10:20**

**Jump Start NGSS Instruction with KET's New Resources BYOD**

Length: 2

Larry Moore, Chuck Duncan

Patterson C

**Session 34**

G

Lecture

Interdisciplinary

Explore the extensive resources available through services such as the newly formatted PBS Learning Media and Discovery Education, both parts of KET's EncycloMedia service. Bring Your Own Internet Device to this session.

**Friday 10:20**

**Brain-STEM: Blending the Goals of STEM, the NGSS and CCSS**

Length: 1

Dr. Ken Wesson

Patterson B

**Session 35**

G

Lecture

Interdisciplinary

This interactive workshop will introduce you to the complex wonder of the human brain and why STEM is best delivered in contexts where Science, Technology and Thematic instruction, Reading/LA, Engineering, Art and Mathematics join together into a "ST2REAM" model for easy student learning and enhanced memory formation.

**Friday 11:30**

**Population Dynamics as a Module for NGSS Teaching**

Length: 1

**Samuel J. Potter, Dr. Robin Cooper**

**Patterson A**

**Session 36**

M H C

Lecture  
Biology/Life Science

Data on population dynamics (survival, pop. growth) of *Drosophila* can be used to illustrate the use mathematical models to predict the impact of environmental disturbances on a population. NGSS is addressed through the integration of biology and math and use of engineering design.

**Friday 11:30**

**Science, Literacy Connections and the ELA Common Core**

Length: 1

**Bonnie Embry**

**Thoroughbred 7**

**Session 37**

G

Hands-on  
Interdisciplinary

Strategies and tools will be shared to help you make literacy connections between hands-on science and the ELA Common Core.

**Friday 11:30**

**Soil Cores for Kentucky Soil Science Education**

Length: 1

**Mark Coyne**

**Thoroughbred 3**

**Session 38**

G

Lecture  
Environmental/Earth

Currently, students do not have access to soil cores and the understanding that can be learned from them as an ecological system. The presentation will demonstrate how soil cores can be utilized as demonstration material for instruction in earth and environmental science topics that are part of the NGSS.

**Friday 11:30**

**Using Online Science Simulations with NGSS**

Length: 1

**Jane Owen**

**Thoroughbred 5**

**Session 39**

E M H

Lecture  
Interdisciplinary

Do you want your science lessons to come alive with online simulations? Come experiment with genetics, ecosystems, force and motion, gravity, the solar system, seasons, stoichiometry and more.

**Friday 11:30**

**Prepare For and Prevent Disruptive Classroom Storms**

Length: 1

**Marjorie Bateman**

**Thoroughbred 2**

**Session 40**

G

Lecture  
Interdisciplinary

Searching for the right blend of words and actions when disruptions occur in your classroom? Learn how to quickly analyze and intervene so you WILL have more time to teach!

**Friday 11:30**

**Science, Literacy and Technology, OH MY!**

Length: 1

**William Thornburgh, Ashley Shelton**

**Patterson E**

**Session 41**

H

Lecture  
Interdisciplinary

The presentation will focus on multiple ways that science teachers can incorporate literacy into the science classroom. Various ideas for articles and graphic novels, forms of assessment, and levels of implementation will be discussed.

**Friday 11:30**

**Formative Assessment Through Video Creation**

Length: 1

**Tricia Shelton**

**Thoroughbred 4**

**Session 42**

G

Lecture  
Interdisciplinary

Join us for interactive instruction on creating video thinking products to demonstrate deep understanding of core ideas, proficiency of the argumentation, explanation and data analysis and interpretation, NGSS Science and Engineering Practices and CCSS Speaking and Listening Standards.

**Friday 11:30**

**Using the School Building to Teach Energy Systems**

Length: 1

Dr. Sheila Yule, Tyler Cvitkovik, Karen Reagor

**Thoroughbred 6**

**Session 43**

E M

Hands-on

Interdisciplinary

Participants will be introduced to the school building as a system, explore conduction with insulation materials, look at heat transfer using infrared thermometers, simulate home airflow, and test building performance measures.

**Friday 11:30**

**Constructing Scientific Models to Explain Phenomena**

Length: 1

Emily Miller

**Patterson B**

**Session 44**

G

Hands-on

Interdisciplinary

Constructing scientific models is one of the key scientific and engineering practices in the Framework for K-12 science education and the NGSS. In this workshop, you will see key features of models, and engage in a model building activity.

**Friday 12:30**

**Spotlighting Our KSTA Exhibitors**

Length: 0

Exhibits Coordinator

**Thoroughbred Exhibit**

**Session 45**

G

Demonstration

All Sciences

Time to focus attention on our exhibit area while no other activities are in session.

**Friday 1:00**

**General Session Keynote: "Amazing Science"**

Length: 1

Jason Lindsey

**Thoroughbred 1**

**Session 46**

G

Lecture

Integrated Science All Sciences

From giant clouds to floating Diaper Genie Bags, Jason Lindsey aka "Mr. Science" with Hooked on Science will get you excited about the Next Generation Science Standards by doing some of the most amazing experiments. Jason operates his website and traveling science education presentations under the heading of "Hooked On Science".

**Friday 3:00**

**The New National Board Process and You**

Length: 1

Josh Underwood, Amanda Underwood

**Thoroughbred 2**

**Session 47**

G

Lecture

Interdisciplinary

Have you avoided National Board Certification because of the time commitment an/or expense? Come learn how NB has reformatted the process and fees to make it better for candidates. Also learn about support available for you during the certification process.

**Friday 3:00**

**Project-Based Investigations of the KY River Watershed**

Length: 1

Carol Hanley, Jennifer Cook, Lee Ann Hager

**Thoroughbred 4**

**Session 48**

Kathryn Turbek, Larisa McKinney

Lecture

M

Environmental/Earth

This session will describe a teacher institute conducted in the summer of 2014 to engage middle school teachers as learners in project-based investigations. The central goal of this two-year project is to improve middle school teachers' competence and confidence in teaching environmental concepts.

**Friday 3:00**

**Investigating Renewable Energy with KidWind and Vernier**

Length: 1

David Taylor

**Patterson C**

**Session 49**

M H

Hands-on

Physical Science Integrated Science

Learn how you can incorporate engineering design principles into lessons focusing on renewable energy using KidWind Wind Experiment Kits and Vernier data-collection technology including the new Vernier Energy Sensor.

**Friday 3:00**

**Do You Hear What I Hear?**

Length: 1

Emily Miller

**Thoroughbred 5**

**Session 50**

P E

Hands-on

Physical Science

Hands-on activities, investigations and experiences allow students to explore science. Discussions should be used to both elicit prior knowledge and generate questions, as well as make sense of those investigations. This session will model a lesson on sound.

**Friday 3:00**

**Do Your Tests Pass the Test?**

Length: 1

Joshua Z. Fugate, Andrea P. Wilhoite

**Thoroughbred 3**

**Session 51**

Janie L. Knell, Wilson J. Gonzalez-Espada

Lecture

G

Interdisciplinary

Content assessments with a multiple-choice format, created either by the teachers or curriculum companies, are very common in schools. In this session we will show teachers how they can "test" the tests using basic psychometric techniques.

**Friday 3:00**

**Buddy-Up to NGSS Through Companion Lessons**

Length: 2

Reeda Hart, Carrie Holloway, Lila Brindley

**Patterson A**

**Session 52**

P E

Biology/Life Science Environmental/Earth Physical Science

Hands-on

A set of hands-on companion lessons will be highlighted from each of the major science areas. One lesson will focus on NGSS Science Practices while the other will focus on Engineering, with a common thread of Content. Free CD of lesson plans!

**Friday 3:00**

**Linking NGSS and Common Core ELA**

Length: 1

Stephanie Harmon

**Thoroughbred 7**

**Session 53**

H

Lecture

Interdisciplinary

This session will focus on strategies and resources that enable us to incorporate literacy standards into our science classrooms so that they become a natural part of how we teach.

**Friday 3:00**

**Demystifying the NGSS with STEMscopes**

Length: 1

Dr. Terry Talley

**Thoroughbred 8**

**Session 54**

G

Hands-on

Interdisciplinary

The NGSS are here and STEMscopes is ready; are you? Join us for this one hour session that looks at how the NGSS have been successfully integrated into a STEM curriculum that is aligned and student-centered.

**Friday 3:00**

**Is Climate Change Real?**

Length: 1

Lora Hillerich, Tim Schneider

**Patterson B**

**Session 55**

M H

Lecture

Environmental/Earth

A Project-Based Learning unit and activities will be shared. The unit was developed and implemented as part of a MUSE grant project. The unit is aligned to NGSS with a global climate change theme.

**Friday 3:00**

**What Will NGSS Look Like in My Classroom?**

Length: 1

Terry Rhodes

**Patterson E**

**Session 56**

G

Lecture

Interdisciplinary

Classroom activities to help teachers address the multi-dimensional aspects of NGSS. Attendees will come away with research based strategies that will raise the rigor of their instruction.



**Friday 4:10**

**Brain-STEM: Blending the Goals of STEM, the NGSS and CCSS**

Length: 1

Dr. Ken Wesson

**Patterson C**

**Session 57**

G

Lecture  
Interdisciplinary

This interactive workshop will introduce you to the complex wonder of the human brain and why STEM is best delivered in contexts where Science, Technology and Thematic instruction, Reading/LA, Engineering, Art and Mathematics join together into a “ST2REAM” model for easy student learning and enhanced memory formation.

**Friday 4:10**

**Standards Based Grading in the Science Classroom**

Length: 1

Sandy Montgomery

**Thoroughbred 5**

**Session 58**

M

Lecture  
Interdisciplinary

This session will focus on how a middle school science teacher has designed her units for standards based instruction and grading. This will include discussion of how she worked student reteaching and retakes into her classroom as well as increasing students' accountability.

**Friday 4:10**

**Hands-on Next Generation Science Standards**

Length: 1

Jason Lindsey

**Patterson D**

**Session 59**

G

Demonstration  
Interdisciplinary

From a “Garden in a Sandwich Bag” to a “Turkey Baster Ping Pong Ball Launcher,” “Mr. Science” will show you, step-by-step, how to connect these experiments and more to the Next Generation Science Standards.

**Friday 4:10**

**Becoming a Kentucky Green School**

Length: 1

Ashley Hoffman, Michelle Shane

**Thoroughbred 2**

**Session 60**

G

Lecture  
Interdisciplinary

Learn about resources available to K-12 schools in order to become a certified green school in Kentucky. Receive tools, training and resources for student-led Green Teams to create healthier schools - and to save schools money!

**Friday 4:10**

**Hands-On Human Ecology for the Next Generation**

Length: 1

April Haight

**Thoroughbred 8**

**Session 61**

M H

Hands-on  
Environmental/Earth Interdisciplinary

Discover innovative activities for the NGSS that explore population growth, carrying capacity, human impacts on the environment and paths to sustainability. Receive a CD-ROM of lesson plans.

**Friday 4:10**

**Preparing Disciplinary Texts for Discussion**

Length: 1

Teresa Rogers

**Patterson E**

**Session 62**

M H

Hands-on  
Interdisciplinary

How do you implement recent instructional shifts requiring students to engage with rigorous informational texts? In this session, participants will learn how to identify and prepare for potential challenges to support critical thinking and comprehension through small groups and whole class discussions.

**Friday 4:10**

**Strategies for Improving Science Vocabulary**

Length: 1

Jackie Allen

**Thoroughbred 7**

**Session 63**

M H

Hands-on  
Interdisciplinary

Modeling techniques to improve your middle or high school students science vocabulary using strategies from Harvey Silver, TPT and others.

**Friday 4:10**      **Prepare for and Prevent Disruptive Classroom Storms**  
 Length: 1      **Marjorie Bateman**      **Thoroughbred 4**  
**Session 64**      G      Lecture  
 Interdisciplinary

Searching for the right blend of words and actions when disruptions occur in your classroom? Learn how to quickly analyze and intervene so you WILL have more time to teach!

**Friday 4:10**      **Wonders of Magnets for Primary**  
 Length: 1      **Tyler Cvitkovik, Dr. Sheila Yule, Karen Reagor**      **Patterson B**  
**Session 65**      P      Hands-on  
 Interdisciplinary

This session is designed to meet the kindergarten KCAS standards for "Push and Pull" using hands-on activities from NEED's Wonders of Magnets curriculum.

**Friday 4:10**      **Apps for the Teacher and Student**  
 Length: 1      **Patrick Goff**      **Thoroughbred 3**  
**Session 66**      G      Hands-on  
 Interdisciplinary

Bring your own smart device and learn how to use Twitter, Socrative, Remind 101 and others in the classroom. Participants should have a Twitter account.

**Saturday 8:00**      **Breakfast with a National Geographic Author**  
 Length: 1      **Malcolm Butler**      **Thoroughbred 1**  
**Session 67**      G      Lecture  
 All Sciences

Enjoy breakfast provided by National Geographic and meet Dr. Malcolm Butler who is one of the lead authors for Nat Geo Science and Associate Professor of Science Education at University of South Florida.

**Saturday 8:00**      **Using Online Science Simulations with NGSS**  
 Length: 1      **Jane Owen**      **Thoroughbred 6**  
**Session 68**      E M H      Lecture  
 Interdisciplinary

Do you want your science lessons to come alive with online simulations? Come experiment with genetics, ecosystems, force and motion, gravity, the solar system, seasons, stoichiometry and more.

**Saturday 8:00**      **Classroom Activity on Skeletal Muscle Anatomy and Physiology**  
 Length: 1      **Michael Shultz, Dr. Robin Cooper**      **Thoroughbred 8**  
**Session 69**      M H C      Lecture  
 Biology/Life Science

Presenters from the UK Center for Muscle Biology will share educational modules that enhance learning of stereology and biological function of skeletal muscles. Activities aligned with NGSS will help participants to develop creative ways to demonstrate movements of skeletal muscles.

**Saturday 8:00**      **Remote Sensing and GIS: What Better Way to STEM?**  
 Length: 1      **Demetrio Zourarakis**      **Patterson B**  
**Session 70**      H C      Lecture  
 Environmental/Earth Interdisciplinary

Geographic Information Systems (GIS) and Remote Sensing are both broad-based disciplines that rely on mathematics, technology and science. This presentation will provide examples of how simple GIS and RS concepts and tools can be used to exemplify and connect to STEM education.

**Saturday 8:00**

**Practices of Scientists and Engineers - Using Argumentation**

Length: 2

Dr. Terry Talley

**Patterson D**

**Session 71**

G

Hands-on  
Interdisciplinary

Argumentation and Discourse are processes in which students are able to identify the strengths and weaknesses in a line of reasoning and to defend their own explanations.

**Saturday 8:00**

**Teaching Transverse Waves and Their Characteristics**

Length: 2

Dr. Tom Tretter, Lee Ann Nickerson

**Thoroughbred 4**

**Session 72**

Scott Schneider Christy Rich, Natali Richter

E M H

Hands-on  
Physical Science

This session explores a variety of teaching strategies and resources for teaching this complex topic in age-appropriate fashion spanning grades 4 through high school. Hands-on experiences with strategies in order to translate these ideas directly into your classroom.

**Saturday 8:00**

**Exhibits Area is Open**

Length: 4

Exhibits Coordinator

**Thoroughbred Exhibit**

**Session 73**

G

Demonstration  
All Sciences

Pay a visit to our KSTA exhibitors

**Saturday 8:00**

**Assessment for Learning Practices that Change Student Mindset**

Length: 1

Ken Mattingly

**Patterson C**

**Session 74**

G

Lecture  
Interdisciplinary

Assess for learning is built on a series of principles that focus on the student perspective. This session will detail a practitioner's process for implementing them. Specific examples of how this process changes student mindset, as well as grows confidence, will be examined.

**Saturday 8:00**

**Using Experimental Design in NGSS: A Four Step Strategy**

Length: 1

Bonnie Embry

**Thoroughbred 5**

**Session 75**

G

Hands-on  
Interdisciplinary

Students are to ask questions, define problems, plan and carry our investigations and use evidence to support their arguments in science. use this four-step method in guiding students to develop investigable questions related to the performance expectations of NGSS.

**Saturday 9:10**

**KEA Cadre: Kentucky Core Academic Standards for Science**

Length: 3

Candace Edmonds, and others

**Patterson A**

**Session 76**

G

Hands-on  
All Sciences

The KEA KCAS for Science training includes an overview of the new science standards. Participants will learn how to deconstruct a standard and develop "I Can" statements for student objectives, plus knowledge and skills to advocate for appropriate implementation of the standards in their schools.

**Saturday 9:10**

**What Will NGSS Look Like in My Classroom?**

Length: 1

Terry Rhodes

**Thoroughbred 2**

**Session 77**

G

Lecture  
Interdisciplinary

Classroom activities to help teachers address the multi-dimensional aspects of NGSS. Attendees will come away with research based strategies that will raise the rigor of their instruction.

**Saturday 9:10**

**Scale-based Visualizations of the Atom**

Length: 1

Dr. Wilson Gonzalez-Espada

**Thoroughbred 3**

**Session 78**

M H

Hands-on

Physical Science

The small size of atoms makes them very hard to visualize and compare with normal-sized objects. Atomic models can complicate students' understanding of atomic scale. Participants will use a lobed ball, representing a nucleus, to illustrate proper atomic scales.

**Saturday 9:10**

**Developing Student Engineers**

Length: 1

Tyler Cvitkovik, Dr. Sheila Yule, Karen Reagor

**Thoroughbred 8**

**Session 79**

P E M

Hands-on

Interdisciplinary

Participants will be introduced to activities and tools from the national Energy Education Development Project curriculum that promote development of engineering practices within the classroom, home and community.

**Saturday 9:10**

**Engineering, Technology & Application of Science K-8**

Length: 1

Dr. Kevin Stinson

**Thoroughbred 7**

**Session 80**

P E M

Hands-on

Interdisciplinary

ready to prepare your students for STEM careers? Using practical applications of science skills from practices-based inquiry lessons, you will learn to integrate engineering processes into best practices.

**Saturday 9:10**

**MDC Strategies in the Science Classroom**

Length: 1

Mindy Curless, Leslie Texas

**Thoroughbred 5**

**Session 81**

M H

Lecture

Interdisciplinary

Many science educators have not considered how the Mathematics Design Collaborative model can be a natural fit in the science classroom. This session will feature William & Thompson's Five Strategies of Assessment for Learning.

**Saturday 9:10**

**Determining if Materials Meet the Intent of NGSS**

Length: 1

Emily Miller

**Patterson B**

**Session 82**

G

Hands-on

Interdisciplinary

Three dimensional learning, called for by the NGSS, shifts the focus of classrooms from learning about science ideas to using science ideas to make sense of phenomena and solutions to problems. The EQUIP rubric is designed to assess curriculum materials for their compatibility with 3D learning.

**Saturday 9:10**

**A New IDEA for STEM Using the 5E Model**

Length: 1

Dr. Terry Talley

**Thoroughbred 6**

**Session 83**

G

Hands-on

Interdisciplinary

Through the IDEA curriculum model, STEMscopes provides K-12 framework resources that embrace the 5E model of instruction. IDEA also allows for teacher choice and success in meeting the varied academic and learning needs of students.

**Saturday 9:10**

**Micromessaging to Reach and Teach Every Student**

Length: 2

Elizabeth Tran, Madhua Kulkarni

**Patterson E**

**Session 84**

M H C

Discussion

Leadership Interdisciplinary

This workshop introduces STEM educators to the research-based and expert developed Micromessaging professional development curriculum and provides ready-to-use strategies to improve classroom pedagogy.

**Saturday 9:10**

**Extreme STEM**

Length: 1

Jason Lindsey

**Patterson C**

**Session 85**

G

Demonstration  
Interdisciplinary

From turning a toothbrush into a robot to engineering a light bulb, Jason Lindsey aka "Mr. Science" with Hooked on Science will use everyday items to show you how to get your students excited about STEM. "Mr. Science" will show you how to implement these STEM experiments and more, in your classroom, on a budget, connecting them to the Next Generation Science Standards.

**Saturday 10:20**

**Literacy in Science**

Length: 1

Hallie Hundemer-Booth, Kelly Stidham

**Patterson B**

**Session 86**

G

Lecture  
All Sciences

In this session teachers will understand how Performance Based Assessment is a natural fit in the NGSS classroom as a formative or summative connection.

**Saturday 10:20**

**Science and Stories: The power of narrative in science learning**

Length: 1

Neil Losin

**Patterson D**

**Session 87**

G

Lecture  
All Sciences

What's a story and why does it matter for science learning? Dr. Neil Losin is a biologist, filmmaker, and National Geographic Explorer. In this presentation, Neil will explore how people engage with science inside and outside the classroom.

**Saturday 10:20**

**Engaging in Argument from Evidence: How to Frame Arguments**

Length: 1

Richard DeLong

**Thoroughbred 2**

**Session 88**

G

Hands-on  
Interdisciplinary

Experience and activity that will model how to use the science and engineering practice of Engaging in Argument from Evidence in any classroom. Participants will use notebook strategies and frame a scientific argument.

**Saturday 10:20**

**How Not to Cook an Ice Cube**

Length: 1

Scott Heydinger

**Thoroughbred 6**

**Session 89**

E M H C

Lecture  
Physical Science

Simple and effective hands-on activities to help students understand the "big picture": how light, heat, waves, forces, temperature, states of matter and energy are all related, and see an amazing metal that can remember its shape.

**Saturday 10:20**

**Becoming a Kentucky Green School**

Length: 1

Ashley Hoffman, Michelle Shane

**Thoroughbred 3**

**Session 90**

G

Lecture  
Interdisciplinary

Learn about resources available to K-12 schools in order to become a certified green school in Kentucky. Receive tools, training and resources for student-led Green Teams to create healthier schools - and to save schools money!

**Saturday 10:20**

**A Curriculum for Teaching Climate Change: Example Activities**

Length: 1

Andrew West, Caley Melton

Molly Keen, Rebecca McPhearson

Hands-on  
Environmental/Earth

**Session 91**

M

Join us as we model sample activities from a recently developed curriculum for teaching Climate Change at the Middle School level. The entire digital curriculum will be provided.

**Saturday 10:20**

**Developing Effective Questioners and Problem Solvers**

Length: 1

Mindy Curless, Leslie Texas

Thoroughbred 5

**Session 92**

M H

Lecture

Interdisciplinary

Effective questioning and problem solving strategies are essential skills the teacher must artfully develop in students. In this session you will engage in activities that promote rigorous problem solving and model effective questioning strategies.

**Saturday 10:20**

**Teaching Longitudinal Waves, Including Sound**

Length: 2

Dr. Tom Tretter, Lee Ann Nickerson

Thoroughbred 4

**Session 93**

Scott Schneider, Christy Rich, Natali Richter

E M H

Hands-on

Physical Science

This session explores a variety of teaching strategies and resources for teaching this complex topic in age-appropriate fashion spanning grades 4 through high school. If you have an iPhone or iPad or other device, download the free app "SloPro" which will be used by attendees.

**Saturday 10:20**

**Standards Based Grading in the Science Classroom**

Length: 1

Sandy Montgomery

Patterson C

**Session 94**

M

Lecture

Interdisciplinary

This session will focus on how a middle school science teacher has designed her units for standards based instruction and grading. This will include discussion of how she worked student reteaching and retakes into her classroom as well as increasing students' accountability.

**Saturday 11:30**

**Program Reviews: Don't Run and Hide**

Length: 1

Elizabeth Roland, Leah Manley

Thoroughbred 8

**Session 95**

H

Hands-on

Physical Science

Struggling to incorporate program review activities with your new science standards? We will share selected content based materials aligned to NGSS for astronomy, physics and chemistry that also contributed to the program review in Humanities, Writing and Health.

**Saturday 11:30**

**Developing Assessment-Capable Students in Science**

Length: 1

Ken Mattingly

Patterson E

**Session 96**

G

Lecture

Interdisciplinary

Ken will share how he engages students with targets, and uses them as an integral part of feedback. Most importantly, he will demonstrate how he uses targets to develop assessment-capable students.

**Saturday 11:30**

**Brain-STEM: Blending the Goals of STEM, the NGSS and CCSS**

Length: 1

Dr. Ken Wesson

Patterson C

**Session 97**

G

Lecture

Interdisciplinary

This interactive workshop will introduce you to the complex wonder of the human brain and why STEM is best delivered in contexts where Science, Technology and Thematic instruction, Reading/LA, Engineering, Art and Mathematics join together into a "ST2REAM" model for easy student learning and enhanced memory formation.

**Saturday 11:30**

**Classroom Activity on Skeletal Muscle Anatomy and Physiology**

Length: 1

Michael Shultz, Dr. Robin Cooper

Patterson B

**Session 98**

M H C

Lecture

Biology/Life Science

Presenters from the UK Center for Muscle Biology will share educational modules that enhance learning of

stereology and biological function of skeletal muscles. Activities aligned with NGSS will help participants to develop creative ways to demonstrate movements of skeletal muscles.

**Saturday 11:30**      **NGSS Peer Learning Teams: A Call for Science Teacher Leaders**

Length: 2      **Tricia Shelton, Dr. Kimberly Haverkos**      **Thoroughbred 5**  
**Session 99**      **Melissa Stolz**      Lecture  
G      Interdisciplinary

NGSS Implementation Teacher Leaders share information and strategies for supporting K-12 teachers in the NGSS Implementation process. Strategies for creating immersion and reflection experiences for personalized learning around the new standards.

**Saturday 11:30**      **Light & Sound Energy for Primary**

Length: 1      **Tyler Cvitkovik, Dr. Sheila Yule, Karen Reagor**      **Thoroughbred 3**  
**Session 100**      P      Hands-on  
Interdisciplinary

This session is designed to meet the First Grade KCAS standard for "Light and Sound" using NEED's primary science of energy kit.

**Saturday 11:30**      **Using Online Science Simulations with NGSS**

Length: 1      **Jane Owen**      **Thoroughbred 2**  
**Session 101**      E M H      Lecture  
Interdisciplinary

Do you want your science lessons to come alive with online simulations? Come experiment with genetics, ecosystems, force and motion, gravity, the solar system stoichiometry and more.

**Saturday 11:30**      **Preparing Disciplinary Texts for Discussion**

Length: 1      **Teresa Rogers**      **Thoroughbred 6**  
**Session 102**      M H      Hands-on  
Interdisciplinary

How do you implement recent instructional shifts requiring students to engage with rigorous informational texts? In this session, participants will learn how to identify and prepare for potential challenges to support critical thinking and comprehension through small groups and whole class discussions.

**Saturday 12:40**      **Close Reading in Science**

Length: 1      **Viola Randall**      **Thoroughbred 7**  
**Session 103**      H      Lecture  
Interdisciplinary

When asked to read a text, do your students highlight everything, just search for the answers, or scribble responses without remembering the material? If so, strategies will be shared to help your students learn how to highlight important text, make meaningful notes and read complex texts with confidence.

**Saturday 12:40**      **"Fun"-ative Assessments**

Length: 1      **Carrie Holloway, Reeda Hart, Lila Brindley**      **Thoroughbred 8**  
**Session 104**      P E M      Hands-on  
Biology/Life Science Environmental/Earth Physical Science

Fun, engaging formative assessment techniques to see what students know and to guide instruction using tri-fold boards, voting paddles, "show-me" rings, and more! Free CD of materials will help you see them today and use them in class tomorrow.

**Saturday 12:40**

**PGES**

Length: 2

**Candace Edmonds**

**Thoroughbred 6**

**Session 105**

G

Hands-on  
Interdisciplinary

The KEA PGES session will help participants understand the Kentucky Framework for Teaching. As modifications to PGES were made to the system, KEA's PGES training purpose was amended to include attention to the modifications of various measures that combine into a summative rating of teachers.

**Saturday 12:40**

**Make & Take Session for High School**

Length: 2

**Lisa Devillez, Josh Underwood**

**Patterson C**

**Session 106**

H

Hands-on  
Interdisciplinary

Simple hands-on activities with minimal resources can be used to strengthen students' skills in data collection and analysis. Participants will leave with specific lessons for immediate use and an approach for adapting their own activities in the future.

**Saturday 12:40**

**Make & Take Session for Elementary**

Length: 2

**Clara Fulkerson**

**Patterson D**

**Session 107**

P E

Hands-on  
Interdisciplinary

Two hour session during which participants will be engaged in hands-on activities based on the NGSS/KCAS for Science, grades K-5. Give-aways and some take-away materials will be included.

**Saturday 12:40**

**Jump Start NGSS Instruction with KET's New Resources BYOD**

Length: 2

**Larry Moore, Chuck Duncan**

**Thoroughbred 2**

**Session 108**

G

Lecture  
Interdisciplinary

Explore the extensive resources available through services such as the newly formatted PBS Learning Media and Discovery Education, both parts of KET's EncycloMedia service. Bring Your Own Internet Device to this session.

**Saturday 12:40**

**The National Energy Education Development Curriculum (NEED)**

Length: 1

**Tyler Cvitkovik, Dr. Sheila Yule, Karen Reagor**

**Thoroughbred 3**

**Session 109**

P E M

Hands-on  
Interdisciplinary

Participants will engage in activities that meet grade level disciplinary core concepts.

**Saturday 12:40**

**Sharing Our Work on a State STEMx Performance Guide**

Length: 1

**Dr. Brett Criswell, Eve Proffitt**

**Patterson B**

**Session 110**

G

Lecture  
Interdisciplinary

Kentucky is one of 20 states involved in the Batelle STEMx network. The charge of the Kentucky STEMx network is to help facilitate and coordinate all of the work related to STEM education with the Commonwealth. An early focus of that effort has been to develop a performance guide that can be used to provide indicators of progress in schools.

**Saturday 12:40**

**Teaching Electromagnetic Waves and Communications Tech**

Length: 2

**Dr. Tom Tretter, Lee Ann Nickerson**

**Thoroughbred 4**

**Session 111**

**Scott Schneider, Christy Rich, Natali Richter**

E M H

Hands-on  
Physical Science

The new NGSS in PS4 includes a new topic of teaching students about electromagnetic waves and their uses in modern digital communication systems. This session explores strategies and resources for this complex topic.



**Saturday 12:40**

**Make & Take Session for Middle School**

Length: 2

**Grant Felice**

**Patterson A**

**Session 112**

M

Hands-on  
Interdisciplinary

Teachers will construct and learn to use manipulatives that can be engineered by students to measure and accumulate data in class. Fun session!

**Saturday 1:50**

**CCSS + NGSS = Science Fair Projects**

Length: 1

**Ronda K. Fields, Ashley Fields**

**Patterson B**

**Session 113**

H

Lecture  
Interdisciplinary

NGSS and CCSS are practically telling us to do science fair projects! Louisville regional Science & Engineering Fair Co-Director shares strategies and timeline for projects and possible competitions.

**Saturday 1:50**

**Foldable Frenzy**

Length: 1

**Bonnie Embry**

**Thoroughbred 3**

**Session 114**

E

Hands-on  
Interdisciplinary

Foldables are 3D interactive graphic organizers that can be used by students to organize, display and remember data. Many different patterns will be shared that can be used for note taking, daily work, graphing, concept development, student projects, or alternative assignments.

**Saturday 3:00**

**Closing Session - Door Prize Auction**

Length: 1

**Program Committee**

**Thoroughbred 1**

**Session 115**

G

Show & Tell  
All Sciences

Come spend your K\$TA Bucks and get a nice prize to take home.