



## SESSION A: 8:30-9:30 a.m.

**A1 Ready, Set, Go! Resources to Support the New Michigan Science Standards**

Jen Arnswald, MSTA/Ionia Public Schools

In this fast paced session participants will explore local, state, and national resources to support the implementation of the new Michigan Science Standards. Please bring an internet ready device.

Grades K - 12

**A2 Integrating STEM through Science Olympiad**

Sue West &amp; Michele Svoboda, Michigan Science Olympiad Directors

See examples of how to apply Science Olympiad tasks to STEM and NGSS objectives. Sample lesson plans will be provided. Event overviews and suggestions for team formation will be provided.

Grades K - 12

**A3 Engagement Through Authenticity: How a gold-standard PBL class connected their love of the outdoors to the community.**

Nathan Alkire, Ted Malefyt &amp; Doug Wright, STREAM School

STREAM School offers a rigorous PBL experience that places students in the outdoors. Students learn valuable science and math content alongside everyday skills needed for success in today's world.

Grades K - 16

**A4 Molecular Visualization Programs: An Interactive Approach to Teaching Chemistry and Biology**

Paul Cook, GVSU Chemistry Department

Freeware computer programs such as PyMOL and Coot enable the viewing and analyzing of protein, DNA, and small molecule structures. Learn strategies for implementing their usage in science classes.

Grades 6 - 16

**A5 Energizing the Classroom Through Programming and Circuit Design**

Susan Ipri Brown, Hope College

Attendees will explore hands-on, inquiry-based electronics and programming projects that encourage students to apply math/science knowledge while introducing them to engineering design concepts and applied technology skills in the NGSS.

Grades 6 - 16

**A6 The Chemistry of 3D Printing**

Rick Mushing, Kent Intermediate School District

Explore student lessons connecting the science of chemistry and the 3D printing process.

Grades 8 - 12

## SESSION B: 9:45-10:45 a.m.

**B1 KEYNOTE for Elementary Teachers (K-8)****Engage & Energize Students through STEM**

Holly McGoran, Jenison Public Schools

How do we use science, technology, engineering, and mathematics to engage and energize our students? Together we will take a look at some key components to consider when integrating STEM experiences into the classroom. Be ready to actively engage in STEM practices as we look at examples of implementation at the elementary and middle school levels. Grades K - 8

**B2 CS Unplugged: Hands-on Activities to Introduce Computing to K-12 Students**

Scott Grissom, GVSU School of Computing &amp; Information Systems

CS Unplugged is a collection of free learning activities that introduce computational thinking to K-12 students through engaging games. Participants will experience the activities. No computer needed.

Grades 3 - 12

**B3 Go with the Flow**

Kelly Heid &amp; Natalie Armstrong, GVSU Geology Department

Engage in simple activities that will help demonstrate the dynamics of ocean and air currents. Join us as we explore density, convection, and currents.

Grades 6 - 9

**B4 Immerse Your Secondary Students in NGSS Practices with NexGen Inquiry**

Bill Dinkelmann &amp; Jim Nicolette, Van Andel Education Institute

NexGen Inquiry's web-based student journal and teacher classroom tools are built to support implementation of an inquiry-based curriculum. Bring your technology device to create an account and get started.

Grades 6 - 12

**B5 Water Quality Monitoring: Exploring Time-Series Data**

Janet Vail, Dirk Koopmans, &amp; Fallon Januska, GVSU Annis Water Resources Institute

Lakes have lots of personality. Using the Muskegon Lake Observatory as an example, see how scientists reveal this through long-term monitoring. A lesson from the MSTA journal will be presented.

Grades 6 - 12

**B6 Mathematics in Aviation**

Ebiri Nkugba, Kent Intermediate School District

Teach your students to use real world math through the demonstration and application of vector addition and basic algebraic manipulations applied to flight planning.

Grades 9 - 12

**B7 Engineering a Car with Physics...and Chemistry!**

Michelle Mason &amp; Kathey Mirakovits, Portage Northern High School

This presentation will show how Physics and Chemistry students worked together to save an egg in a car by focusing on the engineering process, core content ideas, and communication between scientists.

Grades 9 - 12

## SESSION C: 11 a.m.-12 noon

**C1 Immerse Your Elementary Students in NGSS Practices with NexGen Inquiry**

Bill Dinkelmann &amp; Jim Nicolette, Van Andel Education Institute

NexGen Inquiry's web-based student journal and teacher classroom tools are built to support implementation of an inquiry-based curriculum. Bring your technology device to create an account and get started.

Grades K - 5

**C2 Great Children's Earth Science Tradebooks**

Steve Mattox, GVSU Geology Department

Sara Dove, GVSU Integrated Science Program

We will review 30 of the best Geology, Weather, and Astronomy children's trade books to use in your classroom.

Grades K - 5

**C3 Collaborating Classrooms: Year-round STEM Connections**

Norm Lownds, Michigan State University

Discover how to connect your classroom to the 4-H Children's Gardens and MSU scientists to enhance and expand STEM learning. Explore integrating technologies including Wonder Wall, Wikis, Smart Signs and iPads.

Grades K - 12

ONLINE REGISTRATION ONLY: [www.gvsu.edu/s/DX](http://www.gvsu.edu/s/DX)

## SESSION C continued: 11 a.m.-12 noon

**C4 MDE Integration and Standards Update**

Megan Schrauben, Michigan Department of Education

"Personalized Learning through Integration" is a primary focus for MDE. Come hear the latest updates from MDE's Office of Curriculum and Instruction about grants, standards, and how it all works together.

Grades K - 16

**C5 Using PhET Simulations with the Battle Creek Science Lessons**

Julie Henderleiter, GVSU Chemistry Department

Participants will test out lessons for grades 3 - 5 using PhET online simulations (free access) to learn about circuits, forces, Newton's Laws, and more. Activities complement Battle Creek Science kits. Participants should bring laptops or tablets.

Grades 3 - 5

**C6 Engaging Students in Learning Beyond Gamification with Gameful Design**

Szymon Machajewski, GVSU School of Computing &amp; Information Systems

Putting play into learning leads to greater focus. Applying gameful thinking to the design of courses has the potential to increase participation and engagement.

Grades 7 - 12

## SESSION LUNCH: 12 noon-12:45 p.m.

Enjoy conversation with your colleagues over lunch. Pick up a box lunch served from the Grand River Room, 2250 Kirkhof Center.

## SESSION D: 12:45-1:45 p.m.

**D1 KEYNOTE for Secondary Teachers (7-12)****Integrating S, T, E, and M - it's not only possible, it's fun for you and your students too!**

Ashley Meyer, Hamilton Community Schools

Keynote speaker, Ashley Meyer, will discuss benefits and strategies for STEM integration in science. During this session she will identify key elements of STEM lessons, present ideas for integrating STEM into existing science lessons, and discuss methods for assessing student learning and how this data can be used to support instructional decisions. This interactive session will also provide attendees with opportunities to practice and discuss how they could use some of these strategies to modify some of their own existing lessons.

Grades 7 - 12

**D2 STEMfest for Kids**

Shannon Long, Lansing Community College

Bronti Belanger, Lansing Community College Student

This session features science activities useful for family science nights or community events. The presenters will engage with and help you plan your family science nights and events.

Grades K - 2

**D3 BCAMSC Science Units and the Practices**

Nancy Karre, Battle Creek Area Math/Science Center

Participants will be engaged in exploring the Science and Engineering Practices in their current units and learn how to incorporate the engineering practices using lessons and materials currently in their units.

Grades K - 7

**D4 Get the Dirt on Clean Water**

Dixie Sandborn &amp; Thomas Long, Michigan State University

Examine how to teach environmental stewardship by highlighting the science behind rain gardens and how run-off water is filtered through the soil keeping contaminants out of our ground water supply.

Grades K - 12

**D5 Modeling Science with a Mysterious Black Box**

Rob Keys, Cornerstone University

Engage in an inquiry-based, mind-challenging activity using simple (but mind-bending) props designed to help students learn model building, hypothesis testing and the nature of science.

Grades 3 - 12

**D6 Aquaponics for Everyone**

Gary Lanning, Covenant Christian High School

Whether you have a greenhouse or a 10 gallon aquarium, teach advanced placement classes or elementary grades, you can incorporate the raising of fish into your science curriculum.

Grades 3 - 16

## SESSION E: 2-3 p.m.

**E1 Sound Science**

Karen Gipson, GVSU Physics Department

This session will introduce and explain a variety of hands-on activities to use with elementary school students to teach basic physics concepts of vibration and sound.

Grades K - 5

**E2 Defining STEM**

Karen Meyers &amp; Kathy Agee, GVSU Regional Math and Science Center

Through examining current definitions of STEM, active discussion, and reflection, develop your own working definition of STEM to share with parents and stakeholders and guide classroom instruction.

Grades K-12

**E3 Made in Michigan - Professional Learning for New Standards**

Sarah Coleman, Muskegon Regional Math/Science Center

Amy Oliver, Allegan/VanBuren Math Science Center

The Michigan Mathematics and Science Centers Network has developed materials to help introduce teachers and administrators to the Michigan Science Standards. Join us as we explore "WHY" our standards are changing and explore available professional development materials.

Grades K - 12

**E4 Teaching Evolution and other Contentious Issues: An Informal Education Perspective**

Trisha Smrecak, Museum of the Earth

Integration of informal museum activities with formal classrooms provides a wealth of resources, knowledge, and activities. Learn how to incorporate the teaching of evolution, deep time, climate change, and even unconventional natural gas resources (fracking).

Grades 3 - 12

**E5 The Biodiversity Invasion**

Christopher Dobson, GVSU Biology Department

Explore how scientists measure biodiversity and consider the potential impact of invasive species on diversity. A detailed 5E lesson plan is provided.

Grades 4 - 8

**E6 Modeling in Science**

Laura Sloma, East Kentwood High School/Michigan Modeling Instruction

Jon Reinhard, Spring Lake High School/Michigan Modeling Instruction

Always dreamed of modeling? Learn how to apply structured inquiry techniques using award winning Modeling Instruction. Incorporate mathematical modeling, proportional reasoning, data collection, graphing, and analysis into class.

Grades 6 - 12