

2023 Three-Day Seminar SAMPLE Schedule



STEAM to the Past, Design for the Future

Description:

This seminar explores the interdisciplinary links between eighteenth-century history and STEAM in the daily lives of American Indians, British colonists, and free and enslaved Black individuals. Participants will compare the experiences of the three diverse groups of people, specifically applied to STEAM—the sciences, technology, engineering, art, and math. Participants will engage with historical interpreters, investigate applied science principles such as design and engineering, chemistry, transportation, and energy, and combine these experiences into dynamic classroom lesson ideas that incorporate primary sources, collaboration, inquiry, and problem solving.

Objectives:

As a result of this seminar, teachers will be able to:

- Identify scientific processes and theories that were necessary for eighteenth-century people to solve everyday problems.
- Incorporate primary sources and next-generation science standards into interdisciplinary lessons that connect history content to science, technology, engineering, and math content standards.
- Connect the past to the present by allowing students to explore how historical STEAM contributions affect our world today.
- Explore how modern tradespeople use experimental archaeology and reverse engineering to better understand the science, technology, engineering, art, and math strategies of the past.

Compelling Question:

How does an understanding of eighteenth-century science, technology, engineering, art, and math help us solve modern-day problems?

Day 1: Monday STEAM in the Trades

“The rapid progress true Science now makes, occasions my regretting sometimes that I was born too soon.” — Benjamin Franklin to Joseph Priestly, 1780

Supporting Questions:

- What are the scientific principles behind eighteenth-century technology?
- What was the lasting impact of science in the eighteenth century?
- How can studying the history of engineering help address contemporary issues?

7:00 a.m. Breakfast, drop-in

8:00 a.m. Walk to the Historic Area

8:15 a.m. Overview of the Historic Area

On this short walk through town, learn about the eighteenth-century capital city as a center for Enlightenment thought and ideas.

9:00 a.m. Changes in State

Learn about the “arts and mysteries” of the metal working trades and the real science, math, engineering, and artistry that makes it all possible.

- Explain how tradespeople use experimental archaeology to reverse-engineer trade processes and uncover the science behind the trades work of the past.

9:45 a.m. Break and Walk

10:00 a.m. STEAM, It’s in the Details

Cabinetmakers make fashionable furniture such as tables, chairs, desks, and chests of drawers. Watch expert woodworkers fashion the intricate details of luxury products with period hand tools.

10:30 a.m. Break and Walk

10:45 a.m. Cooking with STEAM

Explore STEAM connections to cooking, including measuring ingredients, the physical science of boiling point and melting point, and the presentation/artistry of a fine plate.

- Use recipes as primary sources.
- Identify the STEAM connections to cooking both then and now.

11:45 a.m. Lunch

12:00 p.m. Self-Guided Exploration Time

SAMPLE SCHEDULE

Subject to change

- 2:00 p.m.** **English Engineering**
Explore how European colonists designed and built their structures. How did the design and construction of English buildings change over time and with what influences? Who built the English structures in the American colonies?
- Learn about the enslaved and free individuals who built the structures in Virginia’s capital city.
 - Compare and contrast European and American Indian building practices.
- 2:45 p.m.** **Break and Walk**
- 3:00 p.m.** **A Scientific Toolbox**
Identify the scientific principles behind eighteenth-century technology and describe how they work. Topics to be explored include chemical and physical changes, states and properties of matter, and simple machines—levers, pulleys, incline planes, and wheels and axles.
- 3:45 p.m.** **Master Teacher Application Session**
Your Master Teacher shares strategies for bringing history to life in the classroom using the experiences and materials gained from participating in the Teacher Institute.
- 4:30 p.m.** **Teacher Collaboration Time**
You know your students best! Work with other teachers to identify ways to use Teacher Institute materials, content, and strategies in your classroom.
- 5:15 p.m.** **Dinner**

Day 2: Tuesday

Transportation and Exploration

*“From star to star the mental optics rove,
Measure the skies, and range the realms above.
There in one view we grasp the mighty whole,
Or with new worlds amaze th’ unbounded soul.”*

— Phillis Wheatley, excerpt from poem, “On Imagination,
Poems on Various Subjects Religious and Moral” (1773)

Supporting Question:

- How has transportation remained the same and changed over the years?
- Why is exploration still important today?
- How can we design for future exploration?

7:00 a.m. **Breakfast, drop-in**

8:30 a.m. **Meet and Walk to Bus Stop**

9:00 a.m. **Travel by Bus to the Historic Area**

9:30 a.m. **Traveling by Land**

Take a tour of the stables and speak with a carriage driver about eighteenth-century travel and modes of transportation. Explore carriages, carts, riding chairs, and horses.

- Understand the various modes of transportation in the eighteenth century.
- Explore how enslaved men and women traveled (footmen and domestics required to travel with gentry women, passes needed for travel, etc.) acknowledging that not everyone in the city was free to travel.
- Engage with modern research on eighteenth-century travel.

10:45 a.m. **Travel to the Wheelwright Shop**

11:00 a.m. **Hot Wheels at the Wheelwrights**

Wheels kept things rolling in the eighteenth century—from the carriages of the wealthy to farm wagons, ox carts, and cannons. Designed to meet the stresses of unpaved roads, wheels were feats of good engineering and careful craftsmanship. See how the wheelwrights combine several distinct types of wood, iron tires and bands, and sophisticated construction to make their functional yet elegant wheels and vehicles.

12:00 p.m. **Lunch**

SAMPLE SCHEDULE

Subject to change

- 12:30 p.m.** **Self-Guided Exploration Time**
- 2:00 p.m.** **Maps and Exploration**
Explore the map exhibit at the Art Museums of Colonial Williamsburg with Katie McKinney, the Margaret Beck Pritchard Associate Curator of Maps and Prints, and learn how to integrate these images of the world into your classroom.
- Learn how European exploration in North America impacted Native communities.
 - Understand why surveying was important in the colonies and the new Republic.
 - Connect geography and mapping skills to history content.
- 3:00 p.m.** **Break and Walk**
- 3:30 p.m.** **Exploring By Air – Meet a Person of the Past: George Washington**
On January 9, 1793, George Washington observed the launch of the first crewed balloon flight in America. Listen as he recounts his experience and discusses the potential of this new technology.
- Understand the advances in air travel that occurred in the eighteenth century.
 - Recognize the many uses of hot air balloons for new scientific research in the eighteenth century.
- 4:30 p.m.** **Teacher Collaboration Time**
You know your students best! Work with other teachers to identify ways to use Teacher Institute materials, content, and strategies in your classroom.
- 5:15 p.m.** **Break**
- 5:30 p.m.** **Dinner**

Day 3: Wednesday

Experimental Archaeology

“Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness.” — Thomas Jefferson to George Washington, 1787

Supporting Questions:

- How does nature influence and inspire design?
- What do primary sources tell us about the lives of eighteenth-century people?
- How can modern science help us understand the past?

7:00 a.m. Breakfast, drop-in

8:30 a.m. Meet and Walk to Bus Stop

9:00 a.m. Travel by Bus to the Historic Area

9:30 a.m. Eighteenth-Century Agriculture

Start the day by exploring agriculture. Examine how European settlers learned from Native populations about local agricultural practices and the enslaved labor force that tended both crops and livestock in the colony.

- Explore the agricultural practices of the diverse peoples of eighteenth-century Virginia.
- Connect the past to the present through experimental archaeology and the practice of reverse-engineering crops.

10:15 a.m. Break and Walk

10:30 a.m. In Tune with Nature: American Indian Engineering

Learn how American Indians engineered structures to suit their environment and lifestyle. Examine/build models of Native structures and compare them to the John White images. How did American Indian structures change over time and with what influences?

- Use the John White images and examine how art informs experimental archaeology.
- How did environmental factors shape how Native peoples built structures and communities?

11:30 a.m. Lunch and Self-Guided Exploration Time

2:00 p.m. Master Teacher Application Session

Your Master Teacher shares strategies for bringing history to life in the classroom using the experiences and materials gained from participating in the Teacher Institute.

SAMPLE SCHEDULE

Subject to change

- 3:00 p.m. Resource Sharing Session**
Colonial Williamsburg has many resources that include interdisciplinary lessons. Learn where to find some of our favorite lessons, then brainstorm how to integrate interdisciplinary lessons into your classroom.
- Explore the Educator Resource Library.
 - Brainstorm ideas for classroom applications.
 - Checkout and departure procedures.
- 3:30 p.m. Break and Walk**
- 4:00 p.m. Architectural History**
Take a behind-the-scenes tour with Matt Webster, Colonial Williamsburg’s Director of Architectural History, to learn how buildings can be used as primary sources. How can the way a structure is constructed help us discover the past?
- Understand buildings as primary sources.
 - Identify hierarchy of space and connect it to the roles of the people who lived and worked in buildings in eighteenth-century Williamsburg.
 - Understand the science, math, and engineering involved in the study of architectural history.
- 5:00 p.m. Break and Walk**
- 5:30 p.m. Dinner**
- 7:30 p.m. Evening Program**

Day 4: Thursday The Future of STEAM

*“Science is a cooperative enterprise, spanning the generations.
It’s the passing of a torch from teacher, to student, to teacher.
A community of minds reaching back to antiquity and forward to the stars.”*
— Neil Degrasse Tyson, 2014 television series
“Cosmos, A Space Time Odyssey”

Supporting Questions

- What do primary sources tell us about the lives of eighteenth-century people?
- How can modern science help us understand the past?

7:00 a.m. Breakfast, drop-in

8:30 a.m. Meet and Walk to Bus Stop

9:00 a.m. Travel by Bus

9:30 a.m. Concurrent Sessions: Behind the Scenes STEAM!

Uncovering History

Meet with an archaeologist and explore archaeology as a technical field which uses mathematics, problem solving, and critical thinking skills.

- Identify the ways archaeologists are scientists and mathematicians.
- Identify the problem-solving strategies used by archaeologists to discover details about diverse communities who are under-represented in the written record.

Weaving the Stories

Fabric is so intertwined in daily life that it may be taken for granted, but clothing, linens for bed and table, window treatments, and furniture upholstery reveal much about life in colonial America. Go behind the scenes of the Textile Conservation Lab with conservator Gretchen Guidess to learn about the technology used to conserve these delicate pieces of history.

Painting the Town

Join Kirsten Moffit, the Materials Analyst for the Conservation Department, to learn about how scientific paint analysis contributes to our understanding of a building’s history, and that paint isn’t always the only evidence worth considering. Sometimes it is the grime, cracks, damage, or the various traces left behind by the people who lived, worked, and learned in a building that tells the story.

10:30 a.m. Groups Rotate

SAMPLE SCHEDULE

Subject to change

11:30 a.m. Graduation

- Donor recognition
- Credit information

1:00 p.m. Departure