

## ***Carbon TIME* Virtual Professional Learning Program 2022-2023 Program Schedule**



### **Curriculum Description**

*Carbon: Transformations in Matter and Energy (Carbon TIME)* includes 6 NGSS-aligned MS/HS teaching units and coordinated 3-dimensional assessments that focus on processes that transform matter and energy in organisms, ecosystems, and global systems: combustion, photosynthesis, cellular respiration, digestion, and biosynthesis. Students use these cellular and chemical processes to explain the functioning of organisms – plants, animals, decomposers – as well as ecological and global carbon cycling. Across units, intentional scaffolds support students' inquiry practices, evidence-based argumentation, and construction of model-based explanations. Additionally, *Carbon TIME's* toolkit explicitly elevates the crosscutting concepts of matter & energy and scale. The units have been iteratively developed and revised based on research about how students make sense of carbon-transforming processes at multiple scales. Information, including curricular units, can be found at

<https://carbontime.create4stem.msu.edu/>

### **Professional Learning Program Description**

The NextGenPBL team from the MSU CREATE for STEM Institute will be supporting teachers as they implement *Carbon TIME* curriculum in classrooms this year. *Carbon: Transformations in Matter and Energy (Carbon TIME)* Professional Learning Sessions provide participants with experiences to support their use of *Carbon TIME* curricular units in their classrooms, with the ultimate goal of developing students' environmental science literacy and engaging in experiences to *figure out* natural phenomena.

Professional learning activities support four goals for participants:

1. understand three-dimensional learning and the *Carbon TIME* curriculum in the context of the *Next Generation Science Standards*;
2. prepare to teach *Carbon TIME* units in ways that support equitable student outcomes;
3. prepare to learn from classroom experiences and student work; and
4. create and sustain supportive professional learning communities.

## **Virtual Program**

(Session Schedule in the Eastern Time Zone)

### ***Carbon TIME - Overview & Foundational Unit (Systems & Scale)***

**August 1st 2022** 9:00am - 12:00pm (3hrs)

**August 2nd 2022** 9:00am - 12:00pm (3hrs)

**August 3rd 2022** 9:00am - 12:00pm (3hrs)

**August 4th 2022** 9:00am - 12:00pm (3hrs)

*Description:* Establishing a vision for students' three-dimensional engagement with phenomena in ways that support reaching *Carbon TIME* environmental science literacy goals. Engaging in key *Carbon TIME Systems & Scale* activities to understand how unit design, curricular tools, and pedagogical practices support assessing and scaffolding students' three-dimensional performances.

**September 14th 2022** 3:30 - 6:30pm (3hrs)

*Description:* Preparing to teach *Carbon TIME Animals*; focus on students as explainers

**October 5th 2022** 3:30 - 6:30pm (3hrs)

*Description:* Preparing to teach *Carbon TIME Plants*; focus on students as investigators

**November 1st 2022** 3:30 - 4:30pm (1hr)

*Description:* *Carbon TIME Ecosystems* overview & discussion

**December 7th 2022** 3:30 - 4:30pm (1hr)

*Description:* *Carbon TIME Human Energy Systems* overview & discussion

### **Semester 2: Extending *Carbon TIME* scaffolds into Genetics & Evolution units**

**January 18th 2023** 3:30 - 6:30pm (3hrs)

*Description:* Preparing to teach Semester 2 Biology using teacher-developed Genetics and NGS Storylines Evolution units through extending *Carbon TIME* unit scaffolds

*\*note: Teachers of other subjects or grades may also participate.*

**February 15th 2023** 3:30 - 4:30pm (1hr)

*Description:* Reflecting on experiences and strategies for scaffolding and assessing students' three-dimensional performances

**April and/or May 2023** - TBD small group and/or whole group collaboration (1 hr)

*Description:* Studying student work samples; planning for Year 2 implementation.

**Program Cost:** \$2,000 per teacher

**Program Registration:** [Registration Form](#)

## Introducing your *Carbon TIME* Professional Learning Support Team



**Christie Morrison Thomas, Ph.D.** Christie recently graduated from MSU's Curriculum, Instruction, and Teacher Education program. Christie taught middle school science for ten years with the Department of Defense Dependents Schools (DoDDS), which is the American public school system serving military and civilian families overseas. In 2014, Christie joined MSU's *Carbon TIME* team, an NSF-funded research and development project supporting environmental science literacy goals. With MSU's CREATE for STEM NextGen PBL team, Christie now provides professional learning support for the *Carbon TIME* curriculum, facilitating teachers' shifts to assessing and scaffolding students' three-dimensional classroom science performances.

Christie is also active in partnership development for NextGen PBL, serving on the leadership team of the Michigan Science Professional Learning Network (MiSciPLN) and as the Michigan Education Association's (MEA) liaison to the Michigan Science Teachers Association (MSTA) Board of Directors.



**Cory Susanne Miller, Ph.D.** Cory Susanne Miller is a research associate at MSU CREATE for STEM and NGPBL's Director of Elementary Professional Learning. Cory has taught pre-k through grade 7 science in both Connecticut and South Carolina. Cory earned her Ph.D. in Teaching and Learning from The University of South Carolina. Cory's focus at CREATE for STEM is curriculum development and working with elementary teachers as they implement the ML-PBL curriculum, providing professional learning and support.