

Sustainable Science: Contextualizing Chemistry for Middle and High School Teachers Course **Syllabus**

June 9, 2025 - June 30, 2025

Sustainable Science: This course will introduce educators to Green Chemistry and develop the skills and knowledge to integrate sustainable chemistry practices into their classrooms.

Class Meeting Information

This is a virtual learning course with work expected to be completed from June 9, 2025 to June 30, 2025.

There will be two, one-hour synchronous virtual calls (*Zoom Call Information will be sent via email*). All participants will be expected to attend these calls and be prepared to share and discuss their module products.

- Thursday, June 19, 5:00 - 6:00 PM MST
- Thursday, June 26, 5:00 - 6:00 PM MST

Instructor Information

Name: Erin Mayer

Erin Mayer has the amazing privilege of facilitating the learning of scientist explorers at Casey Middle School in Boulder, Colorado. She has been working alongside young learners for over 20 years to create safe and open learning environments filled with opportunities for learners to lead their learning as they connect with and develop deep and enduring understandings of the natural world. As a Beyond Benign certified lead teacher, Erin is an advocate for sustainable practices, including green chemistry practices, that provide students opportunities to define a problem and then create solutions to solve the problem that are sustainable and environmentally conscious. In other words, practices that inspire students to invent, design, and innovate. This directly aligns with her overarching goal for student learners; to build the confidence and capacity in student learners to apply their scientific understandings to address problems that they see and become empowered to develop and create sustainable and applicable solutions.

Prerequisites: High School or Middle School Science Teaching Experience

Course Description:

This course will introduce educators to Green Chemistry and develop the skills and knowledge to integrate sustainability through chemistry in their classrooms. Laboratory activities being used in K-12 classrooms that pose risks to both human health and the environment will be

analyzed, and green chemistry replacement labs and hazard awareness techniques that are safer and more cost effective will be featured. Participants will evaluate laboratories based on green chemistry principles such as safer solvents, real-time analysis and pollution prevention. They will identify lab activities that are of concern to the health and safety of the environment and humans and recognize safer alternatives.

Course Objectives

After completing this course, participants will be able to:

- explain the key criteria of green chemistry.
- examine the effects of chemical products and processes on human health and the environment.
- formulate safer alternatives to traditional K-12 labs.
- apply chemical hazard awareness tools to reduce risk in the classroom and lab.
- implement green chemistry principles and practices in their classrooms.

Required readings:

All required readings will be given to participants in the form of PDF or web-linked documents. No book purchases are required although throughout the course students will be given recommendations for further reading if they wish to purchase these. The Green Chemistry community has made the majority of these resources available for free for educators and this class will encourage teachers to use those resources.

Types of Communication

Students will be expected to attend two virtual meetings. Over the course of three weeks, students will submit assignments on Canvas to complete the course by June 30, 2025. Students may reach out electronically or call if there is an urgent matter. If you have questions of a general nature, please post them in the general question area so the whole class can participate.

Use of resources

Please make use of materials in an ethical manner. Always cite your sources of information, and if you find you want to leverage someone's ideas, templates, etc., it is expected that you credit the appropriate parties. Thanks in advance for being responsible!

Expectations of Students:

I expect you to:

- attend virtual classes fully prepared to discuss all assigned material – share responsibility for the quality of the experience.
- contribute to the class discussion in a way that enhances the learning process.
- conduct yourself in class as you would in a professional situation (i.e., be courteous, offer constructive criticism, compliment on a job well done, and give thoughtful feedback).

- provide ongoing feedback with regard to the extent in which this class is meeting your expectations and objectives.

Module Due Dates:

- Module 1: June 16, 2025
- Module 2: June 23, 2025
- Module 3: June 30, 2025

Please reach out as soon as possible if you have any emergencies or need more time to complete the course. We may or may not be able to accommodate this request.

Expectations of the Instructor:

You can expect me to:

- review course content, materials, and assignments, and discussion forum prompts prior to the start of the class.
- share the course syllabus prior to the start of the course.
- provide timely feedback on learning activities.
- facilitate discussion forums.
- respond to individual email within 24 hours. My email address is erin.mayer@bvsd.org
- enjoy teaching you and learning from you!

Evaluation and Grading

In this course you will be evaluated in the following way:

Virtual Class Participation	10%	
Module 1 (Green Chemistry Reflection)	15%	Due: June 16, 2025
Module 2 (Lab Exploration Reflection)	30%	Due: June 23, 2025
Module 3 (Green Chemistry Lab Design)	45%	Due: June 30, 2025
Total: 100%		

Grading Scale

- A = 90% – 100%
- B = 80% – 89%
- C = 70% – 79%
- D = 60% – 69%