

Introduction to Green Chemistry in the High School Classroom | Summer 2024 | Online Course Syllabus

Class Meeting Information

This is an online class to be completed between June 10 and August 5, 2024. The first week of class is an orientation week for you to become familiar with the process, syllabus and technical requirements. Please familiarize yourself with the tools available on this system. This is a synchronous and asynchronous course that will last for 8 weeks. A work plan will be shared for the eight weeks of assignments that will be due each week (on Sunday at 11:59 pm) coupled with three live virtual classes: *dates TBD*. Graduate-level relicensure credit is available and there will be a sign-up process the first week of the course.

Instructor Information

Name: Cassie Javner

Cassie Javner is a Beyond Benign Certified Lead Teacher. Cassie earned her Master's in Education with Technology Integration from St. Catherine's University in 2018 and a Graduate Certificate in Chemistry through Indiana University in 2022. With several American Chemical Society's Journal of Chemical Education publications Cassie is well versed in developing and implementing green chemistry with her students and leading other educators with her experience. In 2018 Cassie and her team from University of Minnesota were awarded the ACS Committee on Environmental Improvement Award for Incorporating Sustainability into Chemistry.

Prerequisites: High School Science Teaching experience

Course Description:

Green Chemistry is being widely used in industry and the need for future scientists who understand how to use the 12 principles to drive green innovation is acute. Green Chemistry education must be integrated into the way we teach scientists from the earliest ages. This course will provide an introduction to Green Chemistry and give teachers the skills and knowledge to practice green chemistry pedagogy and procedures in their classrooms.

A broad overview of green chemistry will be given including ways that green chemistry is being used in industry. Lesson plans for teachers to use will be introduced which include all of these concepts as well as laboratory activities that can replace those that are currently used by teachers but are dangerous to human health and the environment. These new learnings are intended to be integrated into the content and standards that teachers are already required to teach and a portion of the work for this class will be developing implementation plans for each teacher. A survey of the available resources to teachers will be explored and those that are available for free download will be emphasized.

Course Objectives

After completing this course, the student will be able to:

- Explain the 12 principles of green chemistry
- Give examples of how these 12 principles are being used in industry to make the world more sustainable.
- Give examples of materials they can use to bring an understanding of green chemistry to their students.
- Understand all of the educational and support materials available to High School teachers in the area of green chemistry.
- Identify those lab activities that are of concern to the health and safety of the environment and human health.
- Develop a course plan that weaves green chemistry lesson plans and lab activities through their existing curriculum

Required readings:

All required readings will be given to students 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.

Discussion Forum/Zoom Participation:

The synchronous zoom sessions and the asynchronous forums constitute the online class discussion and are a *substantial portion (40%)* of your grade.

- **Synchronous Zoom Sessions:** There will be 3 synchronous zoom sessions that will provide opportunities for valuable student-student interaction and provide a space to share ideas, ask questions, and learn more from each other. If you are not able to attend the zoom sessions, there will be a recording provided and you will need to complete alternate assignments.
- **Discussion Forums:** In the asynchronous forums, I expect you to participate by posting substantive comments when assigned. Please post your original thread earlier in the week so you and your classmates are able to respond throughout the week. The questions are designed to be based upon the readings and assignments for the week but you are also encouraged to post comments related to general teaching and pedagogy and just general teacher sharing. In addition to posting your own thoughts and ideas, please respond to at least one person's posting for each lesson, you should learn more from your peers here than you can from me so please take advantage of their classroom implementation ideas and tips. The questions I post will not have right or wrong answers and you will be scored on thoughtful participation not on correct content. Of course, I invite you to participate much more than the minimum. You may also be learning at different times so please revisit discussion forums often even if you have fulfilled your requirement there. You can set the online learning portal to send new posts to your email if that is an easier way to keep track of the conversations.

Types of Communication

In an online course, the majority of our communication takes place in the course forums. However, when we have a need for communication that is private, we will use the Canvas Inbox or email. I prefer that you contact me by [Canvas Inbox](#) for individual questions. 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

I expect you to 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., I expect you to credit the appropriate parties. Sadly, it's pretty easy to spot when a student hasn't done so. Thanks in advance for being responsible!

Netiquette

In an online classroom, our primary means of communication is written. The written language has many advantages: more opportunity for reasoned thought, more ability to go in-depth, and more time to think through an issue before posting a comment. However, written communication also has certain disadvantages, such a lack of the face-to-face signaling that occurs through body language, intonation, pausing, facial expressions, and gestures. As a result, please be aware of the possibility of miscommunication and compose your comments in a positive, supportive, and constructive manner.

Expectations of Students:

I expect you to:

- Attend zoom sessions fully prepared to discuss all assigned material –share responsibility for the quality of the experience.
- Contribute to the class discussion and forums in a way that enhances the learning process.
- Conduct yourself in class as you would in a business 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.
- Complete all course work, reading and assignments each week by Sunday at 11:59 pm, not doing so will affect your grade.
- Notify me as soon as possible if you have any emergencies or need more time to complete assignments. I may or may not be able to accommodate this request.

Expectations of the Instructor:

You can expect me to:

- Review course content, materials, assignments and forum prompts prior to the start of the class
- Post my syllabus to the class prior to the start date
- Post my welcome message prior to the start date
- Facilitate threaded discussions
- Respond to individual email/Canvas Inbox within 48 hours. My email is chjavner@gmail.com
- Give you individual feedback on your posted assignments within about a week of the due date
- Enjoy teaching you and learning from you!

Evaluation and Grading

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

Assignment 1 (Intro to Green Chemistry Lesson Plan)	20%
Assignment 2 (Green Chemistry in Industry Lesson Plan)	20%
Assignment 3 (Final Curriculum Plan)	20%
Participation in Discussions (Original Post + 2 Replies) & Zoom Sessions	40%

Note that late assignments will be deducted 10%, as timely posts are critical to fostering discussion and learning in the course.

Grading Scale

A = 90% – 100%

B = 80% – 89%

C = 70% – 79%

D = 60% – 69%

F = Below 60%