I approach all my courses with three goals: to make learning authentic, engaging, and inclusive for all students. As a teacher of future biologists, I want my students to develop critical thinking skills and gain a fundamental understanding of the process of science. I use the National Science Foundation (NSF) Vision and Change Core Concepts and Competencies to guide my curriculum development. To make learning authentic and engaging, my students analyze scientific figures from journal articles, predict the outcome of theoretical experiments, and engage in case studies and problem-based learning to deeply understand key concepts. I flip lectures in my upper-level biology courses to free up class time for experiments and independent research. For example, students in BIOL407, Plant Developmental Anatomy, are each assigned a gene in the model plant Arabidopsis to functionally characterize. Students genotype and phenotype plants harboring mutations in their assigned gene, amplify and sequence the mutant and wildtype DNA sequences, and use bioinformatics to create protein models for the mutant and wild type proteins. Students communicate their findings by authoring a paper as if they were to submit the article for publication in a scientific journal. This project is an authentic research experience that includes all NSF Core Competencies and reenforces many of the NSF Core Concepts they have learned in their 200-level biology courses. To make learning inclusive I believe in modeling and scaffolding assignments. I provide feedback at multiple time points during assignments and allow students to revise their work based on my feedback.

In addition to Biology core courses, I enjoy teaching gen ed courses (SC120N Plants, Places and People, SC60N Art in the Natural World, and PLANT220 Gardening for Fun and Profit) because these classes allow me to expose non-science majors to the wonders of the natural world and because art and gardening are two of my hobbies, so these courses are fun for me to prep and teach. In these classes I have more curriculum flexibility and I can experiment even more with my teaching methods than in biology core courses. I have found that student engagement is key in gen ed courses, since students do not always enter the class interested in learning about plants and nature. I use tastings, workshops, guest speakers, service-learning projects, field experiences, and nature walks to enhance student engagement and learning. For example, in PLANT220, the students grow plants which they sell at a campus plant sale each spring. All profits are donated to food sustainability projects, such as purchasing a produce cooler for our campus Lion's Pantry. The students are motivated by the act of service, but they also enjoy trying to out earn the previous class! I received the Royer Award in 2022 and the Penn State Beaver Advisory Board's Excellence in Teaching Award in 2023 for my use of innovative and engaging teaching practices.

The most significant influence on my teaching philosophy has been my son, who is autistic and has learning disabilities. My son's challenges with learning motivated me to investigate learning science so I could help him learn better and with less stress. This in turn led me to evaluate my own course materials and teaching methods and consider whether I could make them more inclusive for students regardless of their ability, disability, or level of college readiness. I realized that I could be doing better, so in 2021 I completed the Universal Design for Learning (UDL) short course through the Schreyer Institute for Teaching Excellence. UDL uses neuroscience-based teaching and learning strategies to reduce or eliminate barriers to student learning. Inclusive teaching is not something that happens overnight, but every semester I apply the UDL principles to more aspects of my courses and it has become the framework that I use to build new curriculum and assessments. I believe that by reducing barriers for some students, all students benefit in my classes regardless of ability or disability. UDL strategies I use include giving students *choices* in how they access materials (text, video, lecture) and how they demonstrate knowledge and skills learned in the class, being more flexible with group work and due dates and allowing students to revise and resubmit assignments, and boosting student engagement in learning by giving students choices in what they learn about (independent projects, lecture selections) in my classes. It is also important to assess whether these practices are effective for student learning. I use student grades, direct verbal feedback from the students, peer evaluations, and colleague input to determine what works and does not work for each course. I reflect on my SRTEs each semester and make changes based on feedback patterns I observe (such as adding more detailed rubrics for assignments and delivering instruction at a slower pace). My teaching methods and assessment are ever evolving. My view of fairness in education is not about giving all students the same exam or using the same grading rubric, it is about giving all students equal opportunities to learn.