

CHM 594/480: Modeling Instruction in Chemistry I/Methods of Teaching Chemistry is offered at ASU in fall 2021.

Fall 2021: In-person, August 19-Dec. 2, T Th 5:30-7:30pm at Tempe campus, Physical Sciences Ctr H-355.

Instructor: Mitch Sweet, Mitchell.Sweet@asu.edu

Clientele: In-service science teachers, undergraduates, grad students/TAs, community college faculty.

Prerequisite: Two semesters of college general chemistry for science majors, or instructor approval.

Enrollment options: 3 ASU credits (or ASU CEUs-noncredit: reply to jane.jackson@asu.edu for details)

Objectives: help students learn (1) concepts in chemistry from the perspective of systematically developed particle models for matter, (2) a coherent approach to the role of energy in chemical change.

Course plan: Participants are introduced to principles of Modeling Instruction, and then learn how organizing a chemistry course around a series of particle models of increasing complexity can make the experience coherent to students. They are given tested instructional materials for the nine units that we consider the core of a 1st chemistry course, and they work through activities alternately in roles of student or teacher. They practice Socratic questioning techniques for meaningful classroom discourse.

Course content: particulate structure of matter; energy and kinetic molecular theory; stoichiometry; Energy and chemical change.

This graduate course will satisfy 3 credits toward the 18-credit requirement to qualify for adjunct positions in the Maricopa Community College system and/or teach dual enrollment chemistry. Certified Arizona teachers in public schools who seek to qualify to teach dual enrollment chemistry can apply for a \$2,000 professional development (PD) scholarship to defer tuition costs for CHM 594 by \$2000. Apply at <https://azed.gov/titlei/pd-pilot-program>. (Fall sem. tuition/fees: \$2750 for 3 credits. Noncredit: \$400)

For graduate credit, apply to ASU at <https://admission.asu.edu/graduate/nondegree>. \$70 appl fee. Search for CHM 594 (class #84948) at <https://webapp4.asu.edu/catalog>

Syllabus and resources at <http://modeling.asu.edu/MNS/MNS.html>

Questions? Jane.jackson@asu.edu, 480-314-1522

Participants wrote: "It was very organized and well planned." "The pace and organization were excellent." "This was an amazing class. I am so grateful that I had the ability to take it."

"Lifelong professional development is as essential for science teachers as it is for doctors. Typically, it takes at least 10 years of deliberate practice to reach a high level of expertise in any profession. Few teachers have adequate opportunities for sustained professional development, and many have an inadequate background in science to start with, so most remain far from reaching their full potential as teachers. ... teachers need access to lifelong professional development like that provided in Modeling Workshops."

-- David Hestenes, ASU Emeritus Professor & co-founder of Modeling Instruction.

