- Content exams, performance tasks, and homework for determining participants' knowledge for teaching matter using STEM principles.
- A data-based investigation into a classroom experiment measuring mass.
- Clinical interview: Design an interview to determine student understanding of matter, including interview questions with extensions to press for student understanding. Videotape and conduct the interview. Analyze the video using a rubric that assesses both student understanding and the interview process.
- Differentiated lesson: Select one of the course objectives. Develop a lesson to meet the objective for the whole group implementing STEM principles and using technology to facilitate differentiation activities for at least three populations (e.g., gifted students, English Language Learners, Students with Disabilities).
- Case study: Write a case presenting the STEM thinking of a student or group of students on the subject of Matter. Be sure to include details such as student dialogue and questions. Analyze the student thinking and discuss the questions that are raised in the students' STEM thinking.
- Lesson study cycle: Work with a group to develop a task-based lesson including anticipated student responses, questions for classroom discourse, and formative assessment. One person in the group will teach the lesson while other members of the group observe student thinking. Group members refine the lesson in response to the observation data and then teach and analyze the lesson.
- Reflections of STEM understanding: Keep a reflection log that discusses: a concept relating to matter, a question the course participant has, and an application of the STEM idea for your classroom.
- Reading research – choose from possible articles and complete an assignment based on the article; discussions, agreement/disagreement, impact in classrooms.
- Use an online tool, such as a learning management system (e.g. Google Classroom, Canvas Free for Teacher, or Edmodo) to create a lesson on matter with STEM principles, the cross-cutting concept, and the core concept.

Suggested Resources

A framework for k-12 science education; practices, crosscutting concepts, and core ideas. [PDF version]. (2012). Retrieved from www.nap.edu, Washington, D.C.