Below is a list of STEM practices that are important to many STEM fields. These recommended practices are drawn from longer lists and frameworks found in the literature (see frameworks referenced below). In some cases, the practices listed below are more science oriented, or more engineering oriented, but many of the practices are applicable in both science and engineering.

Collaborating with a primary working group member, Implementation Leads will choose a core practice (left-most column) and identify dimensions of that practice that they would like their students to work on, and that they think would be applicable to other courses. Working group members will then use these outcomes to create assessment tools for diagnosing student proficiency on these outcomes, informing curricular design decisions, and for instructors to be able to provide explicit, targeted feedback to students. These practices are informed starting points, but by no means exhaustive or inflexible. The core practices and dimensions can be adapted to suit the interests and needs of instructors.

Core STEM Practice	Example Dimensions of Core STEM Practice
Generating research questions	• Defining a question that expands beyond one's existing knowledge • Defining a question that can be investigated • Defining a question that is of appropriate scope and scale for the time allotted for study
Defining problems	• Stating a problem/need in a solvable way (e.g., if a "better" solution is needed, articulate what "better/best" means in this case • Defining functional requirements – what would a solution to this problem need to do • Stating requirements in a testable way • Distinguishing between constraints and requirements • Stating why a solution is needed
Hypothesizing and making predictions	• Turning a question into a hypothesis • Stating prediction in a testable way • Refining hypothesis and prediction based on outcome of prior experiment(s)
Designing and carrying out investigations	• Selecting variables that are most relevant to the scientific question or engineering problem • Controlling variables and/or defining control samples • Planning procedures that will allow relevant measurements to be made with tools/technology at hand • Planning follow-up procedures to confirm results
Developing and using models (sometimes this overlaps with explanation, since explanations often reference models)	• Articulating which aspects of a phenomenon are important to include in a model • Distinguishing between a model and the actual phenomenon that the model represents • Recognizing limitations of a model, and how they may affect resulting explanation or solution • Adjusting a model to incorporate new evidence

Core STEM Practice	Example Dimensions of Core STEM Practice
Building algorithms	• Identifying and defining relevant variables • Mapping logical flow of algorithm • Determining if there are different "cases" or options to be worked through • Defining "chunks" of code that perform specific operations
Designing solutions within requirements	• Evaluating solutions based on requirements • Identifying whether trade-offs are independent, or interdependent • Understanding how trade-offs work within and between solutions
Constructing explanations based on evidence	• Making a claim • Connecting claim and evidence through reasoning • Interpreting whether observations and/or data are in support of claim • Finding flaws in models or data • Causal coherence – using chains or networks of inferences • Coordinating results from multiple studies