

TeachEngineering Engineering Categories

We categorize TeachEngineering curricula by their amount or depth of engineering as a way to help users understand what is available to them in the digital library. These **engineering categories** are not meant to be rankings of the quality or value of curricula in any other sense. Anecdotally, **category 1** is primarily science/math with some engineering, **category 2** is primarily engineering with some science/math, and **category 3** presents full engineering design. See below for more complete descriptions of each category.

When submitting curriculum for publication, consider these categories carefully. Meeting the criteria for one of the three categories is required for all activities, lessons and units. In rare instances, activities also contribute to the whole in terms of their level of engineering design content, so that a lesson or unit may have a different category than the activities below it. For example, a unit might be category 3 because its lessons and activities contain all of the steps in the engineering design process even though none of those individual lessons and activities is categorized as providing the complete engineering design process.

Definition of engineering: *The creative application of scientific (including math) principles to design, develop and/or predict behavior of structures, machines, apparatus or processes for an intended function (societal problem), with consideration of economics, ethics and safety to life and property.* (ABET)

Definition of technology: *Technology is product created by engineers.*

Category 1. Relating science and/or math concept(s) to engineering

The curriculum is designed to teach science and/or math concepts in part through *relating* the concept to an engineering situation. Here, the primary curricular objective is to teach the science/math concept and the secondary objective is to teach the concept through its *relationship* to engineering. *Relating* the concept might require students to identify real-world problems for which the concept might be useful, identify engineer types and how they might use the concept, or apply the concept to a problem or an intended function. The engineering relationship must be addressed in the Procedure and/or Assessment sections.

Activities/lessons/units must meet the following to qualify for this category (*see engineering content rubric*):

- Section A: Answer “yes” to **two** of two criteria

Category 2. Engineering analysis or partial design

Curriculum at this level may include: 1) a portion of the engineering design process; 2) analysis or testing to predict behavior of structures, machines or processes; or 3) comprehensive application of a scientific (or math) concept to a real problem.

Category 2 curriculum is primarily engineering with some science.

Activities/lessons/units must meet the following to qualify for this category (*see engineering content rubric*):

- Section A: Answer “yes” to **two** of two criteria
- Section B: Answer “yes” to **two** of four criteria
- Section C: Answer “yes” to **one** of six criteria

Category 3. Engineering design process

These curricula require students to complete the engineering design process in a systematic manner. See a description, graphic, handout and posters of the engineering design process at <https://www.teachengineering.org/k12engineering/designprocess>.

Activities/lessons/units must meet the following to qualify for this category (*see engineering content rubric*):

- Section A: Answer “yes” to **two** of two criteria
- Section B: Answer “yes” to **two** of four criteria
- Section C: Answer “yes” to **four** of six criteria



Partial Design
Process



Full Design
Process