

TE Activity Engineering Categories

We categorize *TeachEngineering* activities by their amount or depth of engineering as a way to help users understand what is available to them in the digital library. These categories are not meant to be rankings of the quality or value of activities in any other sense. Anecdotally, categories 1 and 2 are primarily science/math activities with some engineering, category 3 activities are primarily engineering with some science/math, and category 4 activities present full engineering design. See below for more complete descriptions of each category.

When submitting curriculum for publication on *TeachEngineering*, curriculum authors should consider these categories. Only curricula that fall within categories 3 and 4 are eligible for the Premier Award for K-12 Engineering Curriculum.

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.* (modified from ABET)

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

Category 1. Relating Science Concept to Engineering

The curriculum is designed to teach a science concept in part through *relating* the concept to an engineering situation. Here, the primary curricular objective is to teach the science concept and the secondary objective is to teach the concept through *relationship* to engineering. *Relating* the concept might require students to identify real world problems for which the concept might be useful, identify a type of engineer and how they might use the concept, or applying the concept to a problem or for an intended function. The engineering relationship must be addressed in the procedure or in the assessment of the activity.

Activities need to meet the following to qualify for this category (*see attached rubric*):

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

Category 2. Relating Math Concept to Engineering

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

Activities must meet the following to qualify for this category (*see attached rubric*):

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

Category 3. 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 3 curriculum is primarily engineering with some science.

Activities must meet the following to qualify for this category (*see attached rubric*):

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

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

Category 4. Engineering Design

These curricula require students to complete the entire engineering design process in a systematic manner. See http://teachengineering.com/design_proc.php for a complete description of the engineering design process.

Activities must meet the following to qualify for this category (*see attached rubric*):

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