



[www.play-well.org](http://www.play-well.org) We use LEGO® products to teach design, engineering, and construction

## Proposed After-School Enrichment Class 'Engineering FUNdamentals with LEGO®'



### **Engineering FUNdamentals (Grades 1-5)**

Design and build motorized machines, catapults, pyramids, demolition derby cars, truss and suspension bridges, buildings, and other constructions. Explore concepts in physics, mechanical engineering, structural engineering, and architecture while playing with your favorite creations. This is a hands-on and minds-on class suitable for LEGO® novices to "maniacs." This class is not affiliated with the LEGO Group.

For more information about us and project photos please visit our website, [www.Play-Well.org](http://www.Play-Well.org) or contact Ben Creelman at [Benc@play-well.org](mailto:Benc@play-well.org)

### **Pre-Engineering (Grades Pre-K to K)**

Please ask for more information if you are interested in a Pre-Engineering class.

### **Sample 10-Week Curriculum for 'Engineering FUNdamentals'\*\***

Belt & Pulley Cars:	Intro to Motors / Batteries / Pulley Systems
Corbelled Arch Bridges:	Lego Brick Overlapping
Gear Cars:	Gear Ratios, Torque, Speed
Scale Models of Rooms:	Scale
Castles and Catapults:	1st, 2nd, 3rd Class Levers
Merry Go Rounds:	Crown Gears
Inchworms:	Eccentric Motion
Gondola:	Complex Pulley Systems
Pyramids:	Failure Analysis
Skid Steering Vehicles:	Steering Mechanisms

\*\*The curriculum for an actual class is based on the instructor's judgment and collaboration with the program coordinator concerning the specific circumstances of a class.

## **Goals**

The goals of the class are to:

- (1) Develop and enhance students' problem solving and critical thinking skills
- (2) Expose children to concepts and vocabulary of engineering, architecture, and physics
- (3) Provide an opportunity to have a great time with a terrific building toy, and above all else: Have fun while learning!

## **Logistics**

### **Teaching Methodology**

Students work individually, in teams, and as a group throughout the sessions. A short discussion and demonstration of the day's topic starts each meeting. Children are given a design/building assignment. Instructors will provide individual assistance and instruction and facilitate challenges, performance testing, competitions, and modifications to projects.

### **Instructor**

The class will be taught by an experienced instructor. The instructor may not be determined until shortly before the first class meeting. An assistant instructor will be added at our discretion.

### **Company / Instructor Profile**

Play-Well TEKnolgoies has began 'Teaching Engineering to Kids' since 1998 in the San Francisco Bay Area. We now teach throughout California, and in recent years have expanded to several states on the east coast, and to the Seattle area starting in the summer of 2008. Our instructors have varied careers and educational backgrounds (mechanical engineering, architecture, biology, art, geology, alternative energy, civil engineering, etc.). More important, though, is that all share a common enthusiasm for kids, engineering, and LEGO®.

### **Class Materials**

We will provide all materials for the classes. Materials will be removed from the site daily. A single instructor's teaching kit contains adequate materials for 24 children.

### **Facility Requirements**

A standard size classroom is adequate for our classes. Students work on the floor, and our classes are active, with students moving about the classroom. Carpeted or hard surfaces are both acceptable. We like to have table or counter space for laying out materials. Open floor space is desirable, and our instructor can move desks as necessary to access floor space. Any moved furniture is restored at the end of class.

**Class Length**

Class durations will be 60-90 minutes. Longer and shorter duration classes may be negotiated. Some projects are not suitable for a class of 60 minutes, so adjustments are made to conform.

**Class Size**

Minimum 11 students, maximum 16-20.

**Scheduling**

We typically offer one session per year. We cannot promise that we will be able to offer classes during every session of the school year. You can choose a Fall, Winter, or Spring session. The duration is typically 6-12 classes, though we recommend 8-12. We are happy to accommodate your site's need for a shorter or longer session.

**Class Fee**

The fee for our program is \$13-\$16 per class meeting per student per meeting for a 60-90 minute class. Total fee depends on number of meetings in session. Pricing is negotiable.

**Payment**

We request that you collect payment from parents and send one check to Play-Well TEKnologies, or we can set up an online registration on our website for a fee. We typically allow students to add before the second session.