

# Activity Kit!

## Recommended Supplies for the Activities



Below is a list of recommended supplies needed to complete the building activities associated with each Concept. You are welcome to use different materials and adapt the activities as needed. This list is just meant to get you started.

### **Concept 1: Engineering, Architecture, and the Design Process**

#### **Build: Marshmallow Challenge**

- 20 pieces of regular-width spaghetti (uncooked)
- masking tape (1 meter)
- cotton or utility string (1 meter)
- one (large) marshmallow

#### **Design Challenge: Cardboard chair**

- cardboard (or foam core) – old shipping boxes will work great!
- duct tape
- string or twine [optional]
- white glue

### **Concept 2: Tension**

#### **Build: Cable-Stayed Bridge**

- string (3-5 meters)
- foam core (we used a sheet ~60 cm x 45 cm; the amount needed will depend on how big you want to build your bridge)
- nuts/washer/beads (~10) [optional]
- 1 paper clip or a large needle [optional]
- X-Acto knife or craft/utility knife or scissors

### **Concept 3: Compression**

#### **Build: Columns**

- 5 sheets of regular paper
- masking tape (3 meters)

#### **Build: Anti-Funicular Forms**

- ½ cup Plaster of Paris or flour for paper mache, and water
- cheesecloth – we recommend Grade 60 but other types of cheesecloth or thin fabric will work as well
- bowl or plastic bag and spoon to mix the plaster
- string (1 to 2 meters)
- paper clips or tape



## **Concept 4: Tension and Compression**

### **Build: Tensegrity Sculpture**

- dowels (10 or more 15cm long dowels that are ~0.5cm in diameter) with a 1cm notch cut into each end; alternatively, you can use popsicle sticks or coffee stirrers that are taped or glued together
- rubber bands – size #33 rubber bands work well with the 15cm long dowels

### **Build: Trusses**

- balsa wood strips (~0.5cm wide x 1mm thick x 30cm long) x20; alternatively, you can use popsicle sticks or cardboard or foamcore
- X-Acto knife or craft/utility knife
- white glue or hot glue
- ruler

## **Concept 5: Shear and Bending**

### **Build: Cardboard Shelf or Beam**

- cardboard – old shipping boxes will work well
- paper and/or poster board or manila folders
- duct tape
- string
- X-Acto knife or craft/utility knife or scissors

## **Concept 6: Overall Building Response**

### **Single Degree of Freedom Systems**

- wooden dowel (~3mm in diameter x 15-30cm long) x2; alternatively, you can use pieces of uncooked spaghetti
- clay (30-50grams) or mini-marshmallows

### **Build: Cardboard Table**

- cardboard – old shipping boxes will work well
- string
- duct tape
- X-Acto knife or craft/utility knife or scissors