

3-5 Program

Session 2: Engineering Explorers

How does this work and how can I make it better? Are just some of the questions driving our discovery in Engineering Explorers. During this two week session, we will be focusing on the physics and engineering as well as the design of the “stuff” we use in our daily lives. Students will examine how a simple motor works by tearing it apart and putting it back together again. They will deconstruct old computers and small appliances and repurpose what they discover in their explorations to create something brand new, weather it be a robot, a useful tool or an art piece. We will also construct vehicles, airplanes and rockets. In addition, students will learn how to program and construct electronic components as well as robots! Our exploration of the physical sciences and design will also take us to the great outdoors as we look at how we can apply our engineering and design expertise to improving and helping our natural resources.

Week 3: 3-5 - (Physics/Engineering/Design)

	Monday-Earth 1	Tuesday-Earth 2	Wednesday-Water 1	Thursday-Water 2	Friday- Field Trip
9:00 - 9:30	Today's Engineering/ Design Challenge: Straw tower Lower Gym Might need more time for this lesson (45-60 minutes?)	Today's Engineering/ Design Challenge: Paper table Lower Gym	Today's Engineering /Design Challenge *Water filtration Design space or classroom	Today's Engineering/ Design Challenge Paperclip sail boat Design space or classroom	Today's Engineering/ Design Challenge: Alka-Seltzer rocket Soccer field or on sidewalk above soccer field
9:30 -10:30	Tool use lesson: How to solder and strip wire Maker Space	Design & create the body for your car Maker Space or classroom	Tool use lesson: prepare for deconstruction Maker Space	Tour of hydroponics greenhouse Greenhouse	Gwacheon National Science Museum
10:30 - 10:45	Morning Snack	Morning Snack	Morning Snack	Morning Snack	Morning Snack
10:45 -12:00	Makers Space: Model Car construction Maker Space	Makers Space: Finish Model Car construction; testing	Makers Space: Deconstruction of printers to retrieve stepper motors and other useful parts	Makers Space: Complete water wheel powered generator	Field Trip
12:00 - 12:30	Lunch	Lunch	Lunch	Lunch	Lunch

12:30 - 2:00	Swimming Pool	River Trip on bikes	Swimming Pool	River Trip: On bikes to test water wheels for electrical output	Field Trip
2:00 - 2:15	Afternoon Snack	Afternoon Snack	Afternoon Snack	Afternoon Snack	Afternoon Snack
2:15 - 3:30	<u>Roller Coaster Physics</u> Classroom	Adapting cars to run on solar power Maker space or classroom	<u>Water wheel powered generator</u> Maker space	Deconstructing projects of reusable parts Maker space	Field Trip
3:30 - 4:30	Team Building: <u>Back to back drawing</u> Classroom	Team Building: <u>Mine Field</u> Classroom or outside flat spaced	Team Building: <u>Lost at Sea</u> Classroom	Team Building: <u>Cross the River</u> Outside area or classroom	Celebrations Soccer field or Gym

*For the [water filtration activity](#), the students would not be given the order of the materials. The challenge would be to create the "cleanest" water using the materials provided.

Week 4: 3-5 - (Physics/Engineering/Design)

	Monday-Sky 1	Tuesday-Sky 2	Wednesday-Beyond 1	Thursday-Beyond 2	Friday-Field Trip
9:00 - 9:30	Today's Engineering/ Design Challenge: Paper airplane Lower gym	Today's Engineering/ Design Challenge: Simple catapult Lower gym	Today's Engineering/ Design Challenge: Toxic Popcorn Day 1 Classroom or gym	Today's Engineering/ Design Challenge: Toxic Popcorn Day 2 Classroom or gym	Today's Engineering/ Design Challenge: Straw rocket Lower gym or soccer field
9:30 -10:30	Observing aerodynamics in nature : Nature walk with activity	Bernoulli's Principal activities 2, 3 Classroom	Research and design your 2-Liter bottle rocket Makers Space	Exploring and designing ground delivery systems (parachutes) for a doll or action figure	Seoul National Science Museum
10:30 - 10:45	Morning Snack	Morning Snack	Morning Snack	Morning Snack	Morning Snack
10:45 -12:00	Makers Space: Model Airplane construction	Makers Space: Finish Model Airplane construction; Test on field and record distances	Makers Space: 2-Liter bottle rocket construction	Makers Space: 2-Liter bottle rocket construction Set up field for launch	Field Trip
12:00 - 12:30	Lunch	Lunch	Lunch	Lunch	Lunch
12:30 - 2:00	Swimming	Biking	Swimming	Biking	Field Trip
2:00 - 2:15	Afternoon Snack	Afternoon Snack	Afternoon Snack	Afternoon Snack	Afternoon Snack
2:15 - 3:30	construction Maker Space	construction Maker Space or classroom	construction Outside somewhere	Rocket Launches launcher design Soccer field	Field Trip
3:30 - 4:30	Team Building: Students will design an artistic treatment for their wind turbine "tower." Art room or classroom	Team Building: Students will design an artistic treatment for their wind turbine "tower." Art room or classroom	Team Building: Design a NASA crew patch Art room or classroom	Team Building: Celebration of launches Soccer field or gym	End of session celebrations Gym or soccer field