

swe **NEXT**



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It's Summertime!

Hey, SWENexters! Happy summer! Even the SWENext Newsletter takes the summer off, so this is our last newsletter issue of the school year. Since we won't be back until September, we've included two engineering challenges in this newsletter. Enjoy your summer, be safe, and keep engineering!

Materials Science Engineering

To make any engineered device, structure or product you need the right material.

Materials Science & Engineering is the study of all materials, from those we see and use every day, such as the glass in a windshield or the rubber in a soccer ball, to those we don't often see, such as



ceramic tiles of a space ship or the plastic used in medical equipment.

Materials Engineers understand how materials work, and can create new materials when needed, as well as improve existing materials for new uses. They can control the structure of a material, from an atomic level up, so that its properties, like strength, hardness, and flexibility, can be tailored to suit a particular application.

Watch a video about Materials Science & Engineering below:



Meet Jillian Steffek, Materials Engineer



Jill works for Oshkosh Corporation in Oshkosh, Wisconsin. She has a bachelor's degree in Materials Science & Engineering from the University of Wisconsin, and a master's degree in Engineering Management from Milwaukee School of Engineering.

Find out how she got there, a project she's working on, and how you can [**#BeThatEngineer on SWE's All Together Blog**](#).

Watch our Day in the Life of an Engineer videos



Have you ever wondered what its like to be an engineer? SWE has partnered with Terracon to find out more about women engineers, [check out our videos!](#)

After School Program with the Springdale SWENext Club

SWENext Clubs are a way to connect with SWE members and other SWENexters in your local area. It's a fun opportunity to bring SWENexters and other students together in person to get excited and learn more about STEM! The Clubs can be formed from school groups, local friends, already established clubs, and more. [Learn more about SWENext Clubs here.](#)

The Springdale Junior/Senior High School SWENext Club was formed last year. Sue Mellon, a K-12 Educator Member of SWE, is the Club Advisor. She is a gifted support coordinator at the school.

In April, Mary Zeis, from the local Pittsburgh SWE Section, ran an after school program for a few members of the SWENext Club. The club members did an engineering challenge called "Treetop Walkway". Using popsicle sticks, plastic straws, masking tape, and string, they had to design and build a walkway that was 15 inches long, at least 10 inches above the ground, and able to hold a bottle of water for 30 seconds. The SWENexters succeeded in their challenge!

If you want to try building your own Treetop Walkway, [find the directions here.](#)



Mary Zeis and Sue Mellon.



The SWENexters build their walkway.

Register for Invent it. Build it.

Middle school SWENexters: now's the time to [register for Invent it. Build it.](#), our largest hands-on engineering event. When registering, don't forget to enter the early-bird phrase "**BETHATENGINEER**" to be entered into a special raffle at the event!



Take on the SWENext Club Challenge



SWE is challenging the next generation to create an exciting engineering demo and to celebrate women engineers who broke boundaries in their field. The winning club will come to SWE's Annual Conference, WE18, in Minneapolis, Minnesota this October and show their demo to women engineers.

Find out more about how to [start a SWENext Club](#) and take on the [SWENext Club Challenge](#).

Win a cool giveaway with June's SWENext Engineering Challenge



Materials Engineers develop new materials and study their structures to discover new applications for the materials. These materials include ceramics, biomaterials, conductive materials, and many more.

This month, we're challenging you to be a Materials Engineer by making and studying your own bouncy ball. You'll need to formulate and mix a few different solutions to make a polymer that can be shaped into

your ball.

You'll need the following materials:

- White Glue
- Warm Water
- Cornstarch
- Borax
- Food Coloring
- Cups or bowls
- Measuring spoons
- Stirring spoons
- Paper Towels
- Gloves (optional for protection)

Follow the instructions listed below to get formulating. You can also [watch them here](#).

1. Mix 1 teaspoon of Borax with 2 tablespoons of warm water in a cup to create Solution A. Stir well to completely dissolve the Borax.
2. In a second cup, mix 2 tablespoons of white glue with 2 teaspoons of cornstarch. Add a few drops of food coloring to color your polymer. Stir well to combine and create Solution B.
3. Add 1 teaspoon of Solution A to Solution B and stir well to form the final polymer.
4. Once your polymer solution starts to harden, remove it from the cup and quickly knead it with your hands. As it softens and becomes more pliable, roll it into a ball, adding enough pressure to smoothen the outer surface.
5. Test your final product by bouncing it on a hard surface!
6. If you're feeling adventurous, double the amounts of raw materials used for your first ball and make a larger one. Compare how well the balls stay together and

observe the differences in how well they bounce.

Be proud of your new creation and share it with SWENext! Each month, a lucky winner will be selected from the submissions to win a SWENext freebie. Don't miss the chance! All it takes is a few minutes and a great picture. **Please email your entry to swenext@swe.org by July 20.**

Shout out to last month's SWENext Engineering Challenge winner

The lucky winner for May's Robotics Engineering challenge is Angel, age 11. She made a really cool looking robot hand!



Congratulations! Your awesome freebies are on their way.



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