



NATIONAL ENGINEERS WEEK 2022

5G Technology



Learn more about the 5th Generation (5G) mobile network and how engineers impact our world. [START EXPLORING HERE!](#)



MEET OUR INDUSTRY EXPERT

ANDREW (ANDY) CASO
I.T. Quality Engineer >> Verizon

Click on the **green gear** to view our expert's video and learn more about 5G Technology. Currently, Andy leads software-quality engineer teams throughout the US and India. Also, as a co-author, he holds a patent for a solution to test virtual network elements.



STRETCH YOUR LEARNING

EXPAND your engineering knowledge and capacity:

- Check out [Everything You Need to Know About 5G](#) and [How Exactly 5G Works](#).
- Check your learning, after watching the videos, by completing the [5G Nearpod](#).
- Read [Building Your Own Cellphone Network Can Be Empowering & Problematic](#).
- Complete the Innovation Challenge below. ↓



[View NAF's Engineers Week playlist](#)



COMPLETE THE CHALLENGE TO WIN

SHARE FOR A CHANCE TO WIN \$100

Before 3/31/22, share the URL of your completed project presentation [HERE!](#)

SHOWCASE YOUR PROJECT

Check out NAF's Showcase Choice Board on the next page for presentation ideas.

ACCEPT THE INNOVATION CHALLENGE

Deepen your learning by innovating a project solution. Check out the challenge details on the next page.



IMPACT SURVEY FOR EDUCATORS: Scan or click the QR code to share your feedback and for a chance to win \$100.





NATIONAL ENGINEERS WEEK 2022

Innovation Challenge: 5G Technology



ACCEPT THE INNOVATION CHALLENGE

Think about what a 5G town-of-tomorrow would look like, then design one aspect of the town (e.g., health services, public service, education, utilities, or recreational) using a free design platform like [Tinkercad](#), [Blender](#), or [SketchUp](#). Consider the placement of microcells (lamp posts) and use-cases like driverless public transportation, smart-city traffic monitoring, power, parking spaces, irrigation, or security. Illustrate how 5G impacts the people of your town-of-tomorrow. (To extend the project, collaborate with a team, allow each member to design different aspects of the 5G town of tomorrow, and showcase it as a group.)

SHOWCASE YOUR CHALLENGE PROJECT

Bring your project to life by sharing your learning with a global audience! Present your learning journey using the Showcase Choice Board below. Then, generate a URL to share with your class, a mentor, an industry partner, and NAF!



Choice 1: [Create a YouTube video](#) to detail your learning through the project challenge.

Choice 2: Create a [blog](#) to highlight your project and learning journey.

Choice 3: Create a career-readiness digital portfolio to showcase your project and learning journey using [Bulb](#) or [Google Slides](#).



Photo Credit: Disney

Meet Lanny Smoot, a Walt Disney Imagineer! He has 100 U.S. patents, and is considered "[one of the most prolific Black inventors in American history](#)." He strives to inspire Black youth to chase STEM careers.

Choice 4: Produce a [PechaKucha](#) (a 400-second visual story) to showcase your project and learning journey.

Choice 5: Code or create a simple webpage to showcase your project. Consider [Replit](#) or [Wix](#).

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NATIONAL ENGINEERS WEEK 2022

Aerospace Engineering



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MEET OUR INDUSTRY EXPERT

ADALBERTO RIVERA

Sr. Automation & Robotics Engineer >> Collins Aerospace

Click on the **green gear** to view our expert's video and learn more about 5G Technology. Currently, Adalberto leads the design, control, and improvement of the manufacturing process through collaboration within a multi-disciplinary team. Collins Aerospace is a Raytheon Technologies company.



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NATIONAL ENGINEERS WEEK 2022

Software Engineering



Learn more about Software Engineering and how software engineers impact our world. [START EXPLORING HERE!](#)

MEET OUR INDUSTRY EXPERT

ANDRES VINUEZA

Senior iOS Developer >> [Visible](#)

Click on the [green gear](#) to view our expert's video and to learn more about Software Engineering. Andres' work focuses on mobile development with both Android & iPhone Operating Systems (iOS) platforms. He has been an active member of the [Society of Hispanic Professional Engineers \(SHPE\)](#) since 2013.



STRETCH YOUR LEARNING

EXPAND your engineering knowledge and capacity:

- Learn a new computer science skill with a tutorial at [freeCodeCamp](#).
- Participate in a [Hackathon](#), a computer science challenge.
- Design an app with a [wireframe](#) (no code necessary).
- Complete the Innovation Challenge below. ↓



[View NAF's Engineers Week playlist](#)

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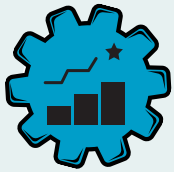




NATIONAL ENGINEERS WEEK 2022

Innovation Challenge: Software Engineering

ACCEPT THE INNOVATION CHALLENGE



STEP 1: Choose one of the following to remix, share, and test with peers, friends, or family:

1. a lesson on [Replit](#)
2. an activity on [Code.org](#)
3. a game on Code.org's [Game Lab](#)

STEP 2: Once you modify (or create) your lesson, activity, game, or code, share and test it with others, get their feedback, and make improvements. Next, showcase your learning journey!

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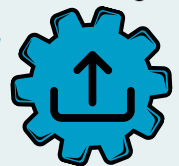
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NATIONAL ENGINEERS WEEK 2022

Software Engineering



Learn more about Software Engineering and how female engineers impact our world.

[START EXPLORING HERE!](#)

MEET OUR INDUSTRY EXPERT

KATE GROSSMAN

Associate Software Developer >> SAP



Click on the **green gear** to view our expert's video and learn more about Software Engineering. Currently, Kate is on the Ariba SpotBuy team and part of SAP's Next Talent program for new graduates that allows participants to explore, develop, and make an impact as full-time employees.



STRETCH YOUR LEARNING



[View NAF's Engineers Week playlist](#)

EXPAND your software engineering knowledge and capacity:

- Learn how to code with [this programming guide](#) an industry expert wished he had when he started.
- Create a self portrait in [CodeYourself](#) using Java.
- Participate in one of these [computer science competitions](#).
- Design an app of your choice with a [freeCodeCamp Tutorial](#).
- Complete the Innovation Challenge below. ↓



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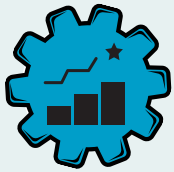




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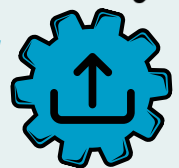
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NATIONAL ENGINEERS WEEK 2022

Introduce a Girl to Engineering



Learn more about how female engineers impact our world.

START EXPLORING HERE!

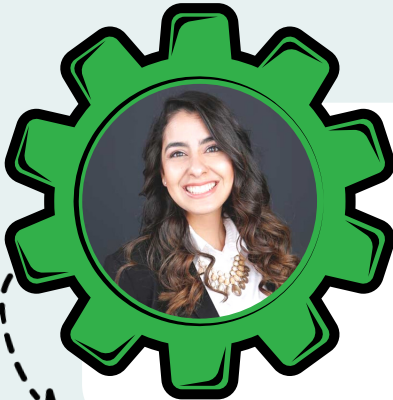
MEET AN INDUSTRY EXPERT



AILEEN TAPIA

Management Consultant >> Accenture

Click on the **green gear** to view our expert's video. Aileen has a degree in Industrial and Systems Engineering and is a servant leader in her STEM community. Her vision is to empower others to realize and maximize their potential and bring more inclusiveness, education, and awareness to underrepresented communities.



STRETCH YOUR LEARNING

EXPAND your engineering knowledge and capacity:

- Learn about [CarnegieSTEMgirls](#).
- Join [DiscoverE's Chats with Change Makers](#) or the [Persist Series](#) for live and on-demand chats each month.
- Complete the Innovation Challenge below. ↓



[View NAF's Engineers Week playlist](#)



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NATIONAL ENGINEERS WEEK 2022

Innovation Challenge: Introduce a Girl to Engineering



ACCEPT THE INNOVATION CHALLENGE

Complete one of the challenges on the next page as part of an effort to "Introduce a Girl to Engineering." Next, showcase your learning! Use the Showcase Choice Board below to share with the world the innovative way you are helping girls feel empowered in their STEM journey.

SHOWCASE YOUR CHALLENGE PROJECT

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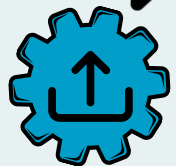
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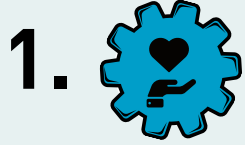
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NATIONAL ENGINEERS WEEK 2022

Introduce a Girl to Engineering

Complete one of the challenges to "Introduce a Girl to Engineering" and build a pipeline of girls in STEM.

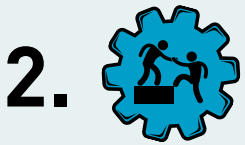


1.

START A STEM CLUB FOR GIRLS IN YOUR SCHOOL OR COMMUNITY

Work with your academy to launch (or further develop) a girls STEM club:

- [Society of Women Engineers \(SWE\)](#)
- [Girls Who Code](#)
- [VEX Robotics](#)
- [FIRST Robotics](#)

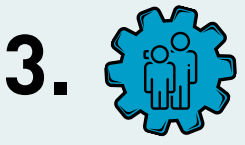


2.

HOST A STEM NIGHT TO SHOWCASE PROJECTS OR COMPETITIONS LED BY GIRLS

Research shows that [stereotypes](#) have more of a negative impact on academic performance than ability or cultural differences. The best way to challenge the stereotypes that discourage girls from embracing STEM is to cultivate environments (academic and social) that showcase what girls can do!

Speak to your educator and school administration about hosting a STEM night, and ensure plenty of space and opportunities for female learners to shine.

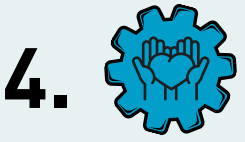


3.

DEVELOP A PROPOSAL TO LAUNCH A GIRLS-IN-STEM MENTORING PROGRAM

Perhaps there was a girl or woman who inspired you to explore STEM. Consider the impact that your encounter had on your STEM journey. Play it forward; find opportunities to encourage other girls to engage in STEM courses or competitions.

Develop [a proposal](#) to launch a mentoring program at your school to include either leveraging your academy's Advisory Board or local industry partners serving as mentors for your high school peers. Maybe, you and your female classmates can mentor elementary and middle school girls interested in STEM. It can be all scenarios; it is up to you!



4.

GET THE MESSAGE OUT!

Tag us on social media (@nafcareeracademy) to share your love of STEM, showcase your project, or your Introduce-a-Girl-to-Engineering initiatives!



— “
[I felt] like I wasn't capable of understanding the science or smart enough to fit into STEM...I had this moment where I asked myself, 'Why can't you do it?' And I realized I had no answers.
” —

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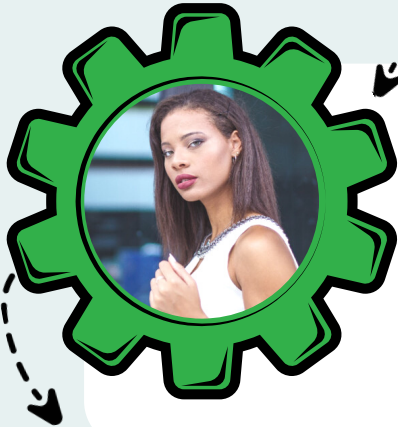


NATIONAL ENGINEERS WEEK 2022

Biomedical Engineering



Learn more about Biomedical Engineering and how female engineers impact our world. [START EXPLORING HERE!](#)



MEET AN INDUSTRY EXPERT

RHYISA ARMBRISTER

Biochemist >> Florida International University (FIU)

Hialeah Gardens High School, Miami-Dade, FL

Click on the **green gear** to view Rhyisa's video to learn more about the biomedical career field. She is a part of the Translational Glycobiology Institute at FIU. Her research focuses on developing a human antibody that can target a tumor glycan which is overexpressed in ovarian cancer, lung cancer, and glioblastoma.



STRETCH YOUR LEARNING



[View NAF's Engineers Week playlist](#)

EXPAND your engineering knowledge and capacity:

- Check out [virus wars](#) and make a model of an [adenovirus \(common cold virus\)](#).
- View and subscribe to [The BME Life](#), a channel dedicated to rising biomed engineers
- Create a video for the [3M Young Scientist Challenge Video Contest!](#)
- Complete the Innovation Challenge below. ↓



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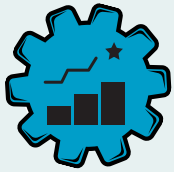
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NATIONAL ENGINEERS WEEK 2022

Innovation Challenge: Biomedical Engineering



ACCEPT THE INNOVATION CHALLENGE

Complete one of the following projects from DiscoverE.org: 1) [Heart valve replacement](#), 2) [Nanomedicine](#) (anti-cancer medicine), or 3) [Space Fitness](#). Another option is to [design a mechanical prosthesis](#) (e.g., a swimming arm by analyzing flow and forces) in [Solidworks](#) or a similar design platform.

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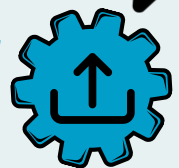
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NATIONAL ENGINEERS WEEK 2022

Cyber Security



Learn more about Cyber Security operations and how engineers secure and protect devices, networks, and data. [START EXPLORING HERE!](#)

MEET OUR INDUSTRY EXPERT

TONY GIBSON

Security Strategy & Operations >> Verizon



Click on the **green gear** to view our expert's video and learn more about Cyber Security. Tony has over 20 years in operations, cyber, development, and multiple areas of I.T., and proudly served in the U.S. Army. He works directly with system architects, developers, support, and management to drive security strategy, creates approaches to protect networks and, most importantly, acts as a conduit between Verizon's Chief Security Office and Application Development and Operations.



STRETCH YOUR LEARNING

EXPAND your engineering knowledge and capacity:

- Learn [Cyber Security in 7 minutes](#).
- Participate in a cyber security [challenge](#).
- Design a personal cyber security plan after conducting research and reviewing [this Cyber-Security Planning Guide](#).
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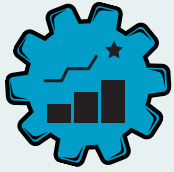
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Innovation Challenge: Cyber Security



ACCEPT THE INNOVATION CHALLENGE

After researching the basics of cyber security, collect information on the number of ways that an intruder can illegally access a device of your choice that is not connected to the Internet. How can you minimize such risk? How would you advise your family and friends to protect themselves? Create a tutorial for them in a format of your choosing.

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Choice 3: Create an infographic to illustrate your findings.

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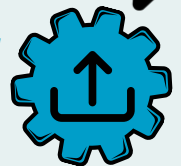
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