USF 2025 Engineering Expo Visitor's Guide

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Introduction

Welcome to the USF Engineering Expo!

Thank you for joining us for the 53rd edition of the University of South Florida's Engineering Expo. This guide contains information regarding parking, food options, exhibitors, and more, that will make navigating the Expo much easier for all of you.

The event will take place on Friday, February 28th from 9 AM to 4 PM and Saturday, March 1st from 10 AM to 2 PM at the University of South Florida, Tampa Campus.

We hope you have a nice visit and learn about the field of Engineering and the many opportunities that USF has to offer.

Thanks for coming!

Aastha Jakasania and Amogha Kuppaa

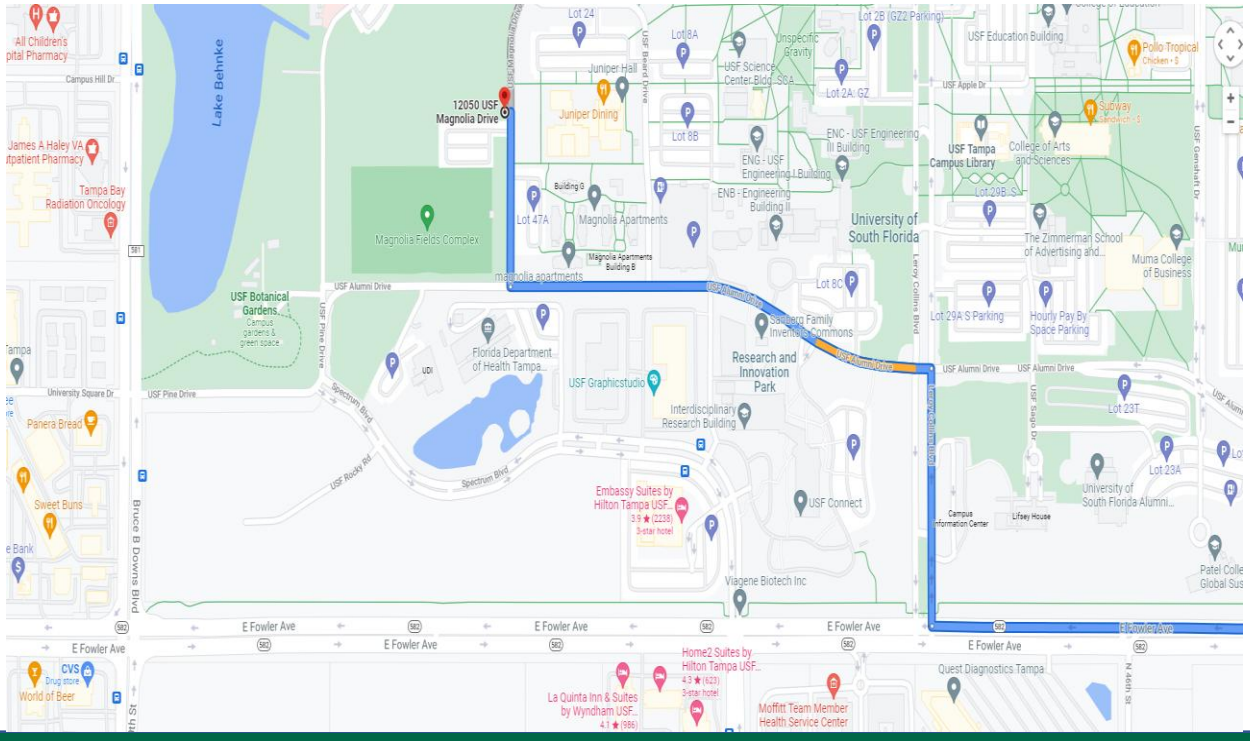
USF 2025 Engineering Expo Co-presidents

Bus and Visitors Parking

Arrival Procedures for Visitors Coming via Buses

BUS DROP-OFF:

- Please Conduct a headcount before arrival to the drop-off zone
- It is preferred that you enter campus at either of the following intersections:
  1. **Fowler Ave and Leroy Collins Blvd**
     - From Fowler Avenue (westbound), turn RIGHT onto Leroy Collins Blvd., turn LEFT on USF Alumni Drive, and turn RIGHT on USF Magnolia Drive

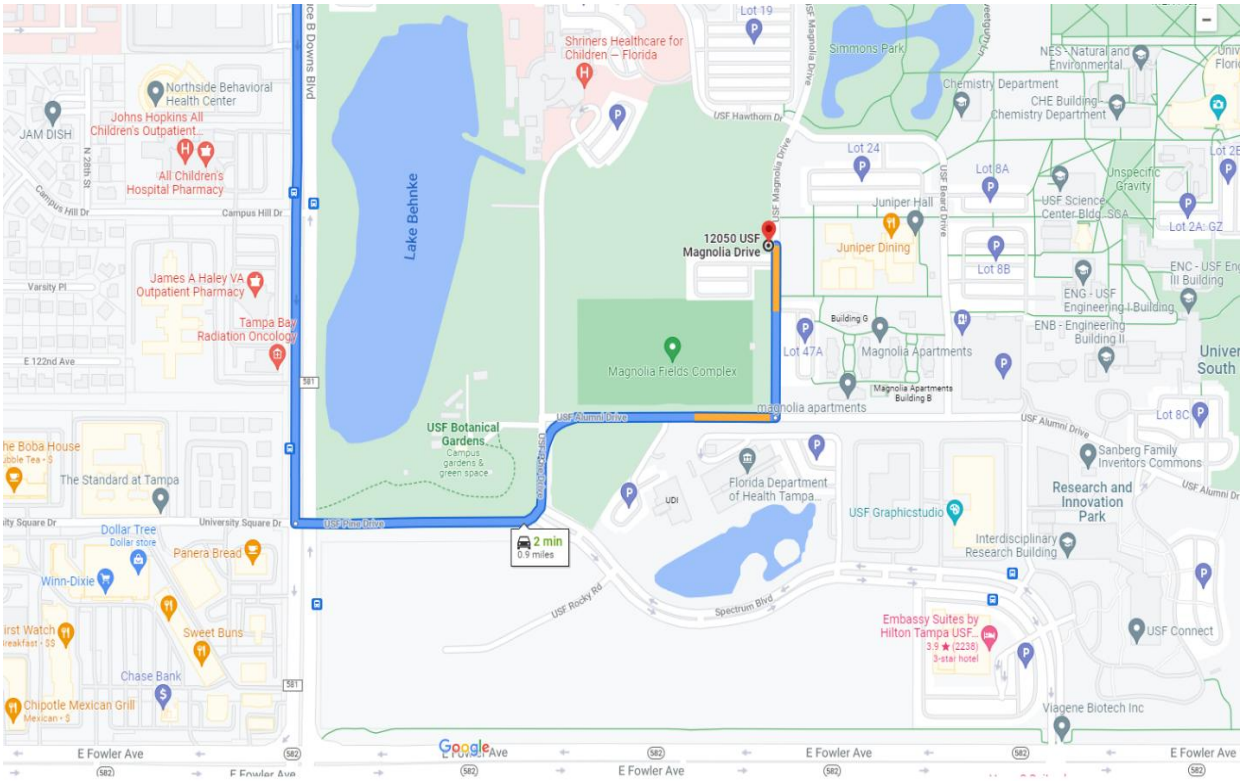


USF is an Equal Opportunity/ Equal Access/ Affirmative Action Institution. For Disability accommodations contact Shannon McLaughlin, Expo Co-President (usfexpo.general@gmail.com), a minimum of five (5) working days in advance.

OR

2. Bruce B. Downs Blvd & USF Pine

- From Bruce B. Downs (southbound), turn LEFT onto USF Pine Drive and follow the road via a slight left. Stay on the rightmost lane and turn RIGHT onto USF Alumni Drive, then turn LEFT onto USF Magnolia Drive



Parking - Buses

After dropping off students at USF, buses will be able to park at the MOSI parking lot which is accessible via 50th Street until the allotted pickup time at 4PM and 2PM on Friday and Saturday, respectively.

- From Fowler Avenue (Eastbound), turn RIGHT onto 50th Street until the first available right to enter MOSI, then turn RIGHT into the MOSI campus, and follow the road until the first available right, following the road all the way down to the parking lot closest to 50th street.
    - The most immediate parking lot visible when turning onto the MOSI campus from 50th street will be where the buses park.
    - Rush hour traffic should be factored for Friday when picking students up.

Please consult the map below for further details.

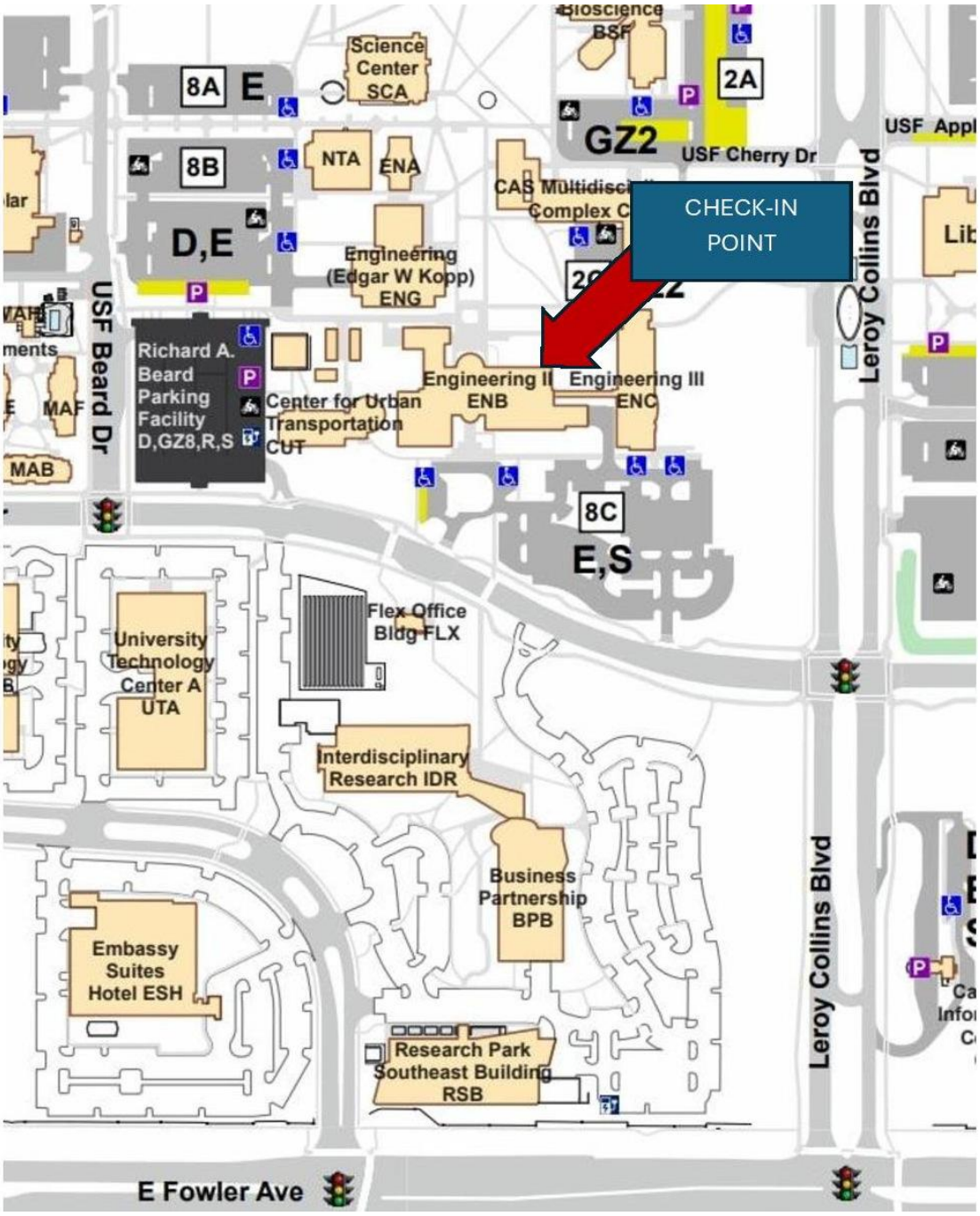
Parking – Other Vehicles

On both days, Friday, February 28th and Saturday, March 1st, visitors coming in other vehicles, not via bus, can park in the **"Beard Parking Garage", levels 3-8**, for the duration of the event.

Please, refer to the "Check In" map in which the parking garage has been labeled.

Check In

We recommend starting your visit at the Expo's Check-in point (Engineering Building II, ENB II). See the map:



Food Options

There will be Food Trucks joining us both days, but you can bring your own snacks and drinks (specially water to stay hydrated!).

Exhibitors

We are very excited about our exhibitors! This year, we will have more than 40 organizations showcasing their experiences and projects in the STEM field.

This is the list of exhibitors registered for the USF 2025 Engineering EXPO, and a description of their exhibits:

1. **Alpha Sigma Kappa** - A spin-off of the game of life: Life with ASK. Kids will get to spin the wheel to win a prize/snack while learning about the organization and how it is STEM centered.

2. **American Association of University Women (AAUW) in Engineering at USF** – The AAUW will have a photo career booth that will allow participants to dress up as what they would like to be when they grow up. Anyone can take a picture which they can take with them as a souvenir!

3. **American Institute of Chemical Engineers (USF AlChE)** - This exhibit will include 6 stations, (1) Making and explaining the creation of dry ice bubbles, (2) creating propane fire bubbles, (3) a flaming reaction between heated gummy bears and potassium chlorate within a test tube, (4) an interactive exhibit with a cornstarch based non-Newtonian fluid, (5) a liquid nitrogen based ping pong ball explosion, and (6) an exhibition of the USF AIChE's ChemE-Car (a nation-wide chemical engineering competition) submission with a demonstration of the chameleon clock reaction used in the competition. The flammable aspects of the exhibit will be demonstrated behind a temporary fence,

with the non-Newtonian fluid being the only interactive exhibit. The ping pong ball explosion will occur every 30 min/1 hour depending on the flow of viewers and will consist of over pressurizing a 2-L bottle filled partly with liquid nitrogen within a storage drum; the exhibit is typically demonstrated several meters from the sidewalk, away from the other experiments, and within additional safety fencing. This exhibit is a collaboration between the USF Chem-Society and AIChE.

4. **American Society of Mechanical Engineers (ASME) at USF** - We will have catapults (about 4 feet tall) for visitors to use to launch projectiles at bowling pins as well as giveaways (ASME swag, small 3D printed objects, and mini catapults for the winners).

5. **American Water Resources Association** - The exhibit will contain a demonstration of water flow over different surfaces. It's a combination of pervious surface material and a manual collection bin. There will also be information on aquifers and flow of water through aquifers. The goal of the presentation is to show individuals how the different surfaces can play an impact in the movement of water.

6. **American Water Work Association** - Our exhibit will showcase the various steps of drinking water filtration and simulate how water is processed. Each step will be explained in detail, emphasizing its role in ensuring safe drinking water. Additionally, we will highlight the importance of conserving water sources and protecting them from contamination. The exhibit aims to educate visitors on the science behind water filtration and inspire sustainable water practices.

7. **Biomedical Engineering Society** - We will showcase our research and development project for this year, which is a myoelectric controlled

prosthetic hand. We will go through what skills we used to create it and the process of making it. We will also allow students and visitors to use and interact with the prosthetic hand.

8. **Brain Computer Interface Club** - Our exhibit features an innovative Unity simulation of a car in motion, paired with a real-world RC car controlled using a brain-computer interface (BCI) headset. Visitors will witness the fascinating ability to move the car simply by thinking, showcasing the power of neural technology. Additionally, we're hosting an interactive event where attendees can use electromyography (EMG) devices to engage in fun mini-activities, offering a hands-on experience with cutting-edge muscle-signal technology. This exhibit highlights the exciting potential of mind-machine interaction in gaming, robotics, and beyond, making it a must-see for tech enthusiasts of all ages.

9. **Bulls Racing (Society of Automotive Engineers - SAE)** - As in previous years, our exhibit will feature a controlled demonstration of our Formula SAE car in Lot 8B. The course will be designed for low-speed operation, and the driver will strictly adhere to conservative driving guidelines to ensure the highest level of safety, particularly given the presence of younger children. A clearly marked safety perimeter with caution tape will be established to keep spectators at a safe distance. Bulls Racing will implement comprehensive safety measures, including fire extinguishers and other necessary emergency equipment. Additionally, we will have a display table featuring legacy components from our team, allowing attendees to safely explore and learn more about our student organization and the engineering behind our race car.

10. **Center for Urban Transportation Research** - Information presentation and Q&A for the rail industry. We will talk about the types of rails in the state of Florida, the various job types, locations, and the importance of rail for transportation, jobs, and goods. We'll provide a fun presentation game where the audience will have to guess the correct answers and win prizes (candy).

11. **ColorStack** - Our exhibit will be a presentation of different areas in which Computer Science can be focused on. We will have demos of projects that the members of ColorStack have worked on. We will also tell the audience about how ColorStack can help them achieve their dreams in tech.

12. **Design for X Laboratory** - We will set up interactive booths around the lab to help students build a coin from three different tools (3d printer, laser cutter and screwdriver).

13. **Electrathon of Tampa Bay.org** - Our booth will incorporate several actual electric vehicles, designed and built by students at various Bay Area high schools and colleges. Team members and sponsors will be on hand to answer questions about creating an ETO team and building an electric car to race.

14. **Engineering Development Club** - We are going to have pictures of past events and past workshops to show how we fulfill our goal of connecting students with professors and industry leaders within STEM. We are also going to share our even bigger goal of eventually developing larger projects that members of the club can work on to have a larger impact.

15. **Engineers without Borders** - We will have two project demonstrations in our booth. The first one will be the living wall project that EWB built in the DFX lab. It is a self-watering plant display wall. The second project will be a model of a rainwater catching system that EWB USF built in the Dominican Republic.

16. **Environmental Protection Commission of Hillsborough County** – We will showcase the following: (1) Air - Various Air Monitoring Equipment and Baghouse Demonstration. (2) Waste - Air Sparging Soil Vapor Extraction System and mechanical treatment system for Petroleum Gas Cleanup. (3) Water - Weir demonstration, carbon absorption and flow meter (doppler) demonstration. (4) Wetlands - Informational display of hydrologic cycle, construction plans, and interactive activities display with brochures and promo items.

17. **Florida Odyssey of the Mind** - We will have an interactive STEM game, grab bags to-go, and information regarding our organization.

18. **Florida Virtual School** – We will be offering information and materials regarding educational opportunities with our school.

19. **Florida Water Environmental Association** - The exhibit will contain a presentation of proper toilet maintenance and management. We will have interactive elements for visitors to demonstrate their knowledge. In addition, we will have a presentation explaining why things can and cannot go into the toilet. This will explain the effects some items have after going into people's toilets and help educate the audience to use their toilets in the right way.

20. **GameDev Club** - We are Partnering up with GoogleDev Club to make a scavenger hunt game that represents the School, our Club and GoogleDev club. It will be a fun little game to show innovative technology in Game Design and the fun that programming, and being an Artist, can bring!

21. **Girls who Code** – Our exhibit will be about creating a simulation of a lie detector using Arduino board.

22. **Google Developer Student Club** - Our exhibit showcases a collaborative VR game development project by the Google Developer Student Club (GDSC) and the Game Development Club at the University of South Florida. This project serves as an excellent starting point for students interested in exploring the fields of technology and game development. It combines programming, design, and storytelling to create an immersive VR experience, while also introducing attendees to the tools and workflows used in game development. The exhibit emphasizes the value of interdisciplinary collaboration and provides a platform for students to gain hands-on experience in emerging technologies.

    We will have two “Meta Quest 3” demonstrating our project in Virtual Reality. Participants can wear these meta quests and interact in the immersive project we've built. We will also have a head-tracking Flappy Bird game that will be used to conduct a competition.

23. **Gulf Coast Academy** – We will showcase the VEX Robotics Clawbot chess game competition.

24. **Institute of Electrical and Electronics Engineers (IEEE)** - It is a showcase of the project designed and developed through the mentorship program at IEEE at USF.

25. **IEEE-CS (IEEE Computer Society)** - We will have small IEEE robots that will perform different manipulations. Moreover, we will have stickers for kids and materials about IEEE-CS as a global organization for the general public. We will be talking about IEEE-CS Juniors, a branch of IEEE-CS for K-12.

26. **Institute of Industrial and Systems Engineering** - We will have an interactive demo for kids. We will also have some puzzles for them to complete for prizes. We will also have a jumbo Jenga with trivia to complete for prizes.

27. **Institute of Transportation Engineers (ITE)** – We will have a board display with information about the Institute of Transportation Engineers.

28. **ITE at USF** - Our exhibit includes a traffic box and a motorcycle simulator with some goodies and swags to give away.

29. **Micro-g NExT Challenge** – Visitors will be able to enjoy a presentation of educational materials about NASA Extravehicular Activities (EVA). There will be a demonstration of a prototype for the EVA tool designed in accordance with NASA's 2025 Micro-g NExT challenge. The tool is intended to collect regolith (soil) samples of the moon. There will be opportunities to ask questions regarding the challenges of the project and on space suits ergonomics.

30. **Middleton High School** – Our booth will showcase the innovative projects of our engineering students. Visitors can experience an interactive game featuring robots built and programmed by our students, combining fun with technical ingenuity. Additionally, we will feature a variety of engineering-themed displays that highlight how science and engineering impact our daily lives. Each display will be presented and explained by our students, offering an engaging opportunity to learn from the next generation of engineers.

31. **National Society of Black Engineers** - We will have a demonstration of a "Liquid Sand Box" where we send pressurized air into a box of sand, so that the sand then behaves like a liquid. Our second demonstration is going to be of a volcano. Our last demonstration will be a balloon of Oobleck to demonstrate a non-Newtonian fluid in a safe and clean way.

32. **ProstheX** – We will showcase the environmentally adaptive prosthetic foot which is designed to adjust to different terrains, providing users with enhanced stability and comfort. It incorporates adaptive materials and mechanical systems that respond to changes in surface stiffness, incline, and load distribution. By dynamically adjusting to the environment, the foot helps reduce strain and improve mobility for amputees. This innovation aims to create a more natural walking experience, making everyday movements smoother and more efficient. We will also be having robotic kits made for high school students.

33. **River Ridge High School Royal Robotics** - We will bring our robot and will give kids demonstrations of what we create. We will give in-depth explanations of the competitions we compete in, how we participate, and show recordings of our matches. We will also educate the

visitors on basic engineering principles and media design. Because we also represent River Ridge High School, it's common for us to give information on the programs at our school.

34. **Robobulls** = Robobulls student members will showcase their mobile robots and AI-driven autonomous systems. Attendees will see live demonstrations of Robobulls' soccer-playing robots. The club will also have a demonstration of computer vision and machine learning applications to robotics. The exhibit will highlight the interdisciplinary engineering behind these robots, including mechanical design, embedded systems, and AI algorithms. The visitors will have the opportunity to interact with team members, learn about ongoing research, and explore how their work is shaping the future of automation.

35. **Society of Aeronautics and Rocketry** – We will showcase our recent projects (rockets and payloads) and engage the target audience (k-12) through fun and informative activities. This year, we're going to give a lesson on parabolic motion and help the audience create paper rockets to compete on a “Paper Rocket Tic-tac-toe”. Students will be split into teams and use PVC air launchers to try to land their rockets on a tic-tac-toe grid. This will give us the opportunity to teach the students concepts behind parabolic motion and simple aerodynamic concepts. We might even engage our audience by exploring how payload placement affects balance, stability, and flight performance. Participants will attach weights to their rockets, test different configurations, and launch them to observe how changes in design influence distance and trajectory.

36. **Society of Competitive Programmers** - We will have a program that focuses on teaching beginners how to code. Then, we will have contestants solving coding/software related problems, which will make

their characters move on the board. Different challenges unlock different moves/paths, and the goal is to beat the challenger to the finish line!

37. **Society of Hispanic Professional Engineers (SHPE)** - The Society of Hispanic Professional Engineers (SHPE) fosters a sense of community and empowerment for Hispanic engineers, promoting diversity and inclusion within the STEM fields. By hosting a K-12 activity centered around Hispanic-themed board games, SHPE engages younger students in a fun, culturally relevant way while introducing them to engineering concepts. These activities not only highlight the rich cultural heritage of the Hispanic community but also stimulate creativity and critical thinking, essential skills for future engineers. At the engineering expo, this approach enhances engagement by making STEM both accessible and exciting for a broader audience, particularly underrepresented groups in the field.

38. **Society of Women Engineers** - This exhibition will showcase a variety of hands-on engineering experiments, each representing different engineering disciplines. These activities will allow visitors to explore concepts such as chemical engineering, mechanical engineering, electrical engineering, and more. Students from various engineering majors will demonstrate projects related to their specific field of study, offering insight into the practical applications of their disciplines.

39. **SPACHeS Lab** - Our exhibit aims to improve sleep practice for high schoolers and undergraduate students. We will explain the importance of sleeping and different wearable devices that can track your sleep. We will invite the audience to participate in our Sleep Awareness Survey.

40. **Tau Beta Pi: The Engineering Honor Society** – We will have two exhibits. Exhibit 1 will be a soda bottle launcher that demonstrates Newton's 1st and 2nd Laws. Water is pumped into the bottle via a stationary PVC pipe structure and once filled completely, the bottle launches into the air. Exhibit 2 will be an acid-base neutralization experiment with safe household chemicals such as turmeric (cooking spice), laundry detergent, white vinegar. Visitors will be given a sheet of paper and Q-tips to paint the acid and base onto the paper and can follow along with a volunteer who will demonstrate and explain the acid-base process.

41. **University of South Florida** - We will showcase two of our autonomous vehicles.

42. **USF College of Engineering Ambassadors** - We will have an interactive board-game-themed engineering display. We represent the College of Engineering and will be able to answer engineering-related questions with respect to all disciplines.

43. **USF CREST Project Group** - Twelve (12) NSF SFS Scholars in teams of 2 or 3 will have Cybersecurity demos (hardware/software), hold Q&A sessions, and display information posters.

44. **Women in Computer Science and Engineering (WICSE)** - We will be doing a kid friendly, interactive code/game that shows the kids how software can be used to create cool and fun interactive applications.

Miscellaneous

- Volunteers will be present throughout the campus and will be able to handle immediate needs such as directing towards a specific exhibit. For more urgent needs, Engineering Expo Committee members will be wearing Polos with name tags and would be happy to help.

- Important phone numbers:
  USF Police Department: 813-974-2628
  Student Health Services: 813-974-2331

- Weather: It is advisable to check the weather on the days of the Expo to be prepared.

We want every participant to thoroughly enjoy the time spent at our event. Please, be respectful and safe during your stay at USF. We hope that everyone has the opportunity to grow, learn, be challenged, and inspired by the activities and experiments offered by our exhibitors.

Have fun!