



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

---

## **Team 2486 The CocoNuts Presents Our 2023 Impact Award Submission “Our Chain(ge) Reaction”**

**Describe the impact of the FIRST program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in FIRST programs as mentors/sponsors.**

The '22 AlumNuts earned 3 AZFIRST scholarships + \$1.8 million in scholarships to schools like Columbia, UC San Diego & Embry Riddle. 5 Nuts intern at Cultural Academic Research Experience, Student Association for Student Advocacy, TGen, & Girls Who Code. 91% of Nuts are in advanced STEM learning such as CIT, AP, IB, & DE. 100% of Nuts graduate,  $\frac{1}{3}$  are 1st generation college students, 95% enter STEM careers. 13 Nuts have been Dean's List Finalists and  $\frac{1}{3}$  of Nuts continue as FIRST volunteers.

**Describe your community along with how your team addresses its unique opportunities and circumstances.**

Flagstaff is a diverse STEM community, home to Northern AZ University. It borders the largest indigenous reservation in the US, an immense area lacking STEM opportunities for most students. In our work to bring STEM to our region, we address challenges head-on as culturally-responsive problem solvers, listening with open hearts to their unique needs. Our dedication to STEM earned us 200+ regional media stories, 12 STEM Students of the Year in our history & the '22 STEM Org of the Year Finalist.

**Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?**

In 3 yrs we did 85 outreach events, workshops & presentations reaching 50,000 people; all feature hands-on robots & info on FIRST. In our Junkyard Robots (JR) activity teams get a LEGO brain + bag of parts to make a racing robot w/o wheels! Anyone, kids to CEOs, learn to think outside the box, engineering process & GP. We shared JR w/250+ people at '22 World Champs. Other teams shared how it helps start new teams & partnerships. We keep a database with all events, hours & people to track impact.



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

**Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.**

The CocoNuts are a team of passionate, enthusiastic, empathetic, diverse young leaders. We are selfless with our time, expertise, and resources; if an event needs volunteers or a team needs parts or technical help, we go the distance to meet that need. Our diversity means that kids from all backgrounds look up to us and realize that they can do STEM too. FIRST has showcased our efforts as role models by featuring 2486 in Star Wars Force For Change, FIRST Impact Blog and 2022 Annual Report.

**Describe your team's initiatives to Assist, Mentor, and/or Start other FIRST teams with emphasis on activities within the past 3 years.**

2486 is vital to FIRST in AZ. In the last 3 seasons we sponsored 16 AZFTC teams for a total of \$2350 through our Registration Grants. Our students have trained 15 new coaches in FLL in a Nutshell PD program to work effectively and maintain a team resulting in 17 new teams in the last 2 years. Nuts mentor 11 local FLL & FTC teams weekly, serving as role models and ensuring our continuity in FIRST. ChEx has been at 200+ FRC events since its inception, bringing transparency to the Impact process.

**Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?**

After 3 remote years, we are bringing back the Lunar Legacy Invitational to in-person action! This tri-program off-season event brings together teams from all over the country to celebrate Flagstaff's role in space exploration. Competition includes FLL, FTC & NASA's Artemis ROADS program, which is free to low-income schools. Teams will go on field trips to Lowell Observatory, meet space scientists, and compete in space-themed STEM activities. This event leads to new FIRST teams across AZ.

**Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years.**

Sponsors: NARBHA, Boeing, FIRST Employee Grant, GKC Geosciences, Marathon Milton, Optimum, Asia Station, WL Gore, Nackard Pepsi: \$18,900 for '23 Entry Fees

NAU: AZFTC Champ venue & \$1500 to run their STEM camp

REV: \$2500 in robot parts

CHS: FLL venue & NutHouse, w/CNC mill from Gore



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

---

FUSD: gas & vehicles to compete & volunteer

Copper State: free hardware

In exchange for 900+ lbs food donated/yr, Flagstaff Family Food Center provides ingredients for travel meals

Flagstaff community: \$20,000/yr for travel

## **Describe your team's efforts in the past 3 years to promote equality, diversity, and inclusion within your team, FIRST, and your communities.**

We actively recruited new Nuts representing our school's diversity. From '21 - '23 we grew from 25-43% female & 36-52% minority students. We ran 2 STEM Fairs celebrating diversity in Leupp (Dine Nation) & Sunnyside, our low-income neighborhood. \$5600 in grants from FIRST & AZ Center for Afterschool Excellence to start Indigenous FIRST teams; after 3 yrs of strict COVID restrictions, in-person activities are finally starting again in Dine Schools! We embody the ethos that STEM is for EVERYONE.

## **Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future.**

A long tradition of Nuts mentoring Nuts means instilling passion & expertise in new generations. Underclassmen have lead roles (driver/presenter), and hold essential volunteer & outreach positions. Nuts look out for the mental & physical wellbeing of others. Partnerships allow us to do a lot with a little & keep costs low so anyone can be a Nut. All Nuts have a voice. Our endlessly positive image means our school & community stand by our mission. Our goal is always to do better than last year!

## **Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years.**

This year we launched a multi-faceted sponsor recruiting effort including 100+ phone calls to local businesses & letter writing blitz for tax credits for travel. We honor all sponsors in press releases, at all events we run, and in videos, publications, on shirts & robot. Personal connections keep sponsors informed of our accomplishments. Sponsors volunteer for FIRST & come to cheer us on! Every single donor from \$6-6000 receives a thank you letter created by the team at the end of each season.



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

**Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.**

The push from Kickoff to competition is stressful; this season we're being mindful of preventing burnout through robot-school-life-family balance, especially since we still run FTC/FLL events in the midst of build season!

We're researching organization methods to assign tasks & track progress so no one carries an unfair burden. We are actively recruiting more technical mentors, especially in programming. We have some promising leads at Katalyst Aerospace, a local firm that employs FIRST alumni.

**Describe your team's goals to fulfill the mission of FIRST and the progress you have made towards those goals.**

2486, the official AZFTC Program Delivery Org, supported 71 teams in '22 by: organizing Kickoff+20 workshops (600 people), 9 qualifiers, 48-team/2-division Champ. We keep FTC fees affordable to lower participation barriers. In 3 yrs & 8000+ hrs we ran 32 FLL/FTC events & supported 49 AZ FRC/FTC/FLL kickoffs, tournaments, scrimmages for 40,000 ppl. Ran interactive remote events in '21 shutdown season & returned in-person w/Ultimate Reunion Tour. Earned '23 AZFLL Champ Outstanding Volunteer Award.

**Briefly describe other matters of interest to the FIRST Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.**

We had the opportunity to create a Kickoff video celebrating mentors and to encourage teams to nominate them for the Woodie Flowers Award; all FRC teams saw it! 21,000+ people have met our Lunar Rover that we created to celebrate Flagstaff's Lunar Legacy. We have a strong social media presence with over 3500 followers. A Tucson family donated materials to create a working, full-scale R2D2 after meeting us at the AZ School for the Deaf & Blind; this project will become a powerful outreach tool.

**(OPTIONAL) Please use this space to ask 1 question to your FIRST Impact Award Judges which will be answered after each event with feedback from the judges (250 characters maximum). Note: Questions asking what is required to win the award will not be answered.**

Where do you see our opportunity to grow and improve in the next year?



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

---

Team 2486: The CocoNuts

Ours is a story that reaches far beyond the students on this team. It changes our community, Arizona *FIRST*, and beyond. A child's chance to drive a robot. An encouraging word from a mentor. A moment of clarity that paves the way to a goal that was previously unattainable. What one person does has a profound influence on many. These are the stories of how *FIRST* changes us and how we in turn transform the world. Each story is a LINK in our "Change Reaction".

## **A Link of MENTORSHIP**

As a missionary growing up in Kenya, Abram always had a love of LEGO. He wanted to join FLL but couldn't due to inaccessibility. After moving to Flagstaff, he met the Nuts. "The CocoNuts were the next step in my journey," he said. Now a senior, he mentors 4 FLL teams that were started by our FLL in a Nutshell training program. Nuts teach 12 hours of training over 4 weeks, catering our curriculum to the specific needs of each coach, whether that's starting a team from scratch or learning sensors. Partnerships with NAU and Flagstaff Unified School District allow us to offer money and Professional Development hours to those who attend our many workshops.

Elijah, a coach who went through Nutshell said, "The training you provided was invaluable in helping me learn how to run practices and teach students the fundamentals of robotics, *FIRST* core values, and functioning as teams. I'm particularly grateful to Abram, who gave our teams the incalculable benefit of his extensive *FIRST* experience. Of the 4 teams that went to the Flagstaff qualifier, 2 went to the AZ championships! Though we didn't place, I heard many students saying 'next year...!' There is a lot of momentum for our school and we are excited to return next season."

In addition to our Nutshell training, we run and host the largest annual FLL qualifying tournament in AZ. Our annual scrimmage provides teams with one-on-one guidance in robot design, programming and practice judging interviews. Nutshell became the foundation of NAU's Future Engineers Summer Camp, in which Nuts taught our curriculum at a free week-long engineering experience to 50 underserved youth. Nut mentors like Abram have provided an opportunity to hundreds of students throughout Northern AZ that he didn't have growing up.

## **A Link of SUPPORT**

Aaron is an exemplary role model for his little brothers, who are excited to "level up" from FLL to FTC. Aaron has volunteered at over 14 events as a robot inspector, referee, and judge. Team 2486 is the official Program Delivery Organization for AZ *FIRST* Tech Challenge. Team entry fees support and run the FTC program. Aaron and his team run our huge annual Kickoff, including 20 standing-room-only workshops. Nuts presented Safety, Advocacy, Sensors & Control Loops, Resume Building with your *FIRST*



# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

---

Experience, and Java Programming. 9 statewide qualifiers feed our huge 2-division Championship, which we run at NAU. For 3 years the Nuts have sponsored FTC teams in financial hardship via our CocoNuts Registration Relief Grant. Nuts review applications and decide on the funding, up to 50% off season registration. 16 teams received funding; many would have folded without our support! The CocoNuts have made FTC in AZ a model of excellence. AZ Head Ref Rich said, "I know what it takes to run a tournament effectively and have seen the legacy the Nuts created across all FIRST Programs. The teams you mentor and volunteers you interact with know having Nuts there makes a huge difference. You unselfishly give your time when you could work on FRC Build. This dedication to supporting all FIRST Programs embodies Gracious Professionalism and makes FIRST thrive in Arizona!"

## **A Link of INCLUSION**

Alicia is a driven indigenous woman who grew up without any STEM role models. As a sophomore, she watched as a fellow Nut organized the "También Lo Puedo Hacer (I Can Do It Too)" STEM Fair to celebrate diversity in STEM for his low income neighborhood. The También Fair was brought back for a 2nd year and replicated in a tiny reservation community, hours away, where many of her family live. The "Dine People are the Future" Fair was brought by the Nuts to Indigenous Schools, a critical step in providing STEM access. Over 100 students at each Fair were able to interact with local STEM organizations: TGen North, AZ Science Center, SciTech, Navajo Nation Fire Prevention, Four Corners Scientific Computing Club, SPARQS, and Cultural Academic Research Experience. Leupp Principal Chee said, "We haven't had a big event like this since COVID-19." The effect on the kids was evident as they begged parents to join their exploration. Networking opened doors to expand to more schools in Flagstaff and to the Miss Navajo Nation STEM Night in Kayenta. Leupp School is now excited to start a FIRST team using our Equity and Access Grant. Alicia was able to create STEM opportunities for hundreds of minority students who otherwise wouldn't have them.

## **A Link of ADVOCACY**

Elle has become a dedicated STEM advocate that speaks on behalf of others. As a freshman, she attended the National Advocacy Conference (NAC) at Capitol Hill in Washington, DC. A young lady who found not only new skills, but a close knit family in the Nuts, Elle spoke eloquently about the need to fully fund the Every Student Succeeds Act. Her voice combined with that of 48 other teams succeeded in passing the CHIPS act, which funds afterschool STEM programs. She sought a way to make her voice heard on a larger stage and became an intern at the Student Association for STEM Advocacy. Elle is organizing the Arizona Advocacy Conference to create public support for FIRST across AZ. After completing advocacy training, AZ FIRST teams will meet with their district legislators to advocate for STEM funding statewide and demo robots at the Capitol. Elle is the next link in our tradition of advocacy including recent





# Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

---

presentations to the AZ House Technology Committee, AZ Senate Education Committee and two virtual NACs. Our mission is to build awareness on the impact of STEM organizations and increase funding for teams. Elle's story shows that one soft voice rallying new voices can create change on behalf of others.

## **A Link of EMPOWERMENT**

Women can be discouraged from the technical side of STEM. That was the case for 5'2" Kate. Before becoming a Nut, she thought that building bots was only for boys; with her team's encouragement, Kate realized she was born to build. She became lead driver and builder her 2nd year. She drives with passion and can coordinate a plan that leads to alliance success. She drove at the prestigious Chezy Champs & helped win both the AZ Robotics League and AZ Championship tournaments! Kate shares her newfound confidence by mentoring, volunteering, and leading numerous young women on and off the field. Her magnetic personality drew more women to our team's technical and nontechnical sides; we are now 43% female! Kate demonstrates that no matter your stature, you can make a big impact.

## **A Link of EXCEEDING LIMITATIONS**

Coming from a low income family can impose limitations, but Kris never limited himself. Before joining the team, he followed the status quo, choosing a welder's certification because that's what his peers did. After joining the Nuts, he saw the doors that were opened by FIRST. 10 Nuts in our class of 2022 were offered \$1.8 million in scholarships! He taught himself programming by coding on his phone since he didn't own a computer. He presented the "Swerve Drive In A NutShell" at FRC kickoff for teams eager to program a highly complex drive train. His hard work earned him the Obama Scholarship, a full ride to AZ State University to study Computer Engineering. He joins the ranks of AlumNuts who overcame their own limitations to pursue STEM degrees in college; one-third of all AlumNuts are 1st generation college students! He shows that hard work and a caring support system lead to success.

## **A Link of PARTNERSHIPS**

Eugene began dabbling in SolidWorks as a freshman. By 10th grade, he became the CAD lead and passed the Certified SolidWorks Associate Test. His expertise was enhanced by the CNC router mill donated by WL Gore. A local biomedical engineering firm, Gore has a close mentoring and volunteering relationship with us; associates dedicate their time teaching Nuts how to operate industry-standard equipment and software so that we can take our robot ideas from imagination to reality. Gore is just one of many vital partners that empower our mission. Our sponsors ensure that entry fees and robot parts don't have to be paid out of pocket, so money isn't a barrier to participate. Eugene found a secret we have all come to learn by being on this team: with the power of collaborative partnerships you will be amazed at what can be achieved.



# Coconino High School Robotics

FRC Team 2486 • The CocoNuts • Flagstaff, AZ

---

## A Link of DETERMINATION

Amoy is a 1st year Caribbean-American who embodies determination. Her resolve is evident in the 2 weeks she spent cold-calling local businesses asking for sponsorships, earning \$8,500 in funding. The success of her marketing campaign was built on creating STEM leaders via access to opportunities, equity, inclusion and diversity. Amoy said, "Being a role model for younger students has been a unique experience. It feels great showing kids that look like me that Black students can be successful as anyone, and that your possibilities aren't limited. It inspires me to keep showing up and contributing to positive change." Heart and determination is the fuel for our mission to expand STEM opportunities for traditionally underrepresented students, both on our team and beyond.

Our "Change Reaction" has been accelerating for 16 years. Since our founding, we've always believed that the best way to lift yourself up is to lift others. This critical link has grown into our catalyst for systemic culture change; in our community, our state, our country, and the world.

"Never underestimate the power of a small group of committed people to change the world. In fact, it is the only thing that ever has." ~M. Mead