

FIRST Impact Award - Team 4135

2025 - Team 4135

Team Number

4135

Team Nickname

Iron Patriots

Team Location

Modesto, CA - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

Within the last three years, the FIRST program has created many rich opportunities for team participants. Within the last two years, 99% of graduating Patriots have gone to college compared to the overall 28% in Stanislaus County. Many Patriots were inspired to pursue Engineering and other STEM related degrees at many prominent UCS and CSUs, as well as renowned universities such as Harvard.

Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

We come from Modesto, California, the heart of the Central Valley. A city largely defined by its agricultural and diverse socioeconomic background. We primarily rely on the support of our community, who supply our funding (gave ~22,000 for the 2024-2025 season), materials and mentors. Our partnerships with the City of Modesto, MCS, and the Modesto Children's Museum provide us with the opportunity to submerge K-8 audiences into the fascinating world of STEM.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

Patriots spread the FIRST message through hands-on STEM related activities within domestic networks. We work with local Girl Scout troops to help them earn all three robotics patches through our pathway. We also host an annual STEM summer camp which we keep as low-cost as possible, to accommodate to our primarily low-income community. We donate old SPIKE prime kits to students; this year, 64 4th-8th graders enrolled in the camp.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

4135 is strongly committed to providing students with the skills to "be science and technology leaders and innovators." We have made intentional efforts to promote gender equity to reach female communities (ex: GS program) as well as equal opportunity for all economic backgrounds. 85% of our seniors plan to pursue STEM after graduation. Alumni have gone on to pursue careers in Software engineering, Mechanical engineering, YouTube, Google, and local firms such as Gallo Wine.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

4135 encourages Patriots to not only succeed inside of the classroom, but to unlock opportunities in the world around them. In the last three years, students have participated in programs such as NASA Ames Research Center, Hogan Manufacturing, and COSMOS. Alumni also retain connections with the team and many attend our Kickoff celebration and post-season party.
Please provide specific examples of how your team and team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. How do you share these best practices with other teams?
We foster a culture of safety in our shop. All team members must complete a safety test, and members of our mechanical team are required to complete tool training as well as a tool ID test. To make sure safety procedures are always followed, Patriots are required to turn in a behavior contract. In the shop and during competitions, our safety captain keeps a watchful eye over students to be sure they are staying safe.
Describe your team's initiatives to Assist, Mentor, and/or Start other <i>FIRST</i> teams with emphasis on activities within the past 3 years.
This year, 4135 began and mentored the Iron Dolphins at a local elementary school. We also started mentoring another local team: WalleBytes. Both teams were mentored in block coding and design. Both teams also participated in our annual FLL tournaments in November of 2024. This event attracted 24 4135 volunteers, 111 students, and 18 teams. Patriots also volunteer at various FIRST competitions, even ones we aren't competing in.
What other initiatives have you created, grown, sustained, or participated in (<i>FIRST</i> or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?
In an area that is historically scarce on youth-focused STEM education, 4135 puts a heavy emphasis on outreach. We have collaborated with Modesto City Schools to help ignite and nurture local youth's passion for STEM. Throughout the last 3 seasons, we have visited 13+ schools for presentations as well as STEM and CTE nights. 6,300+ people were reached this year alone and 46% of Patriots were encouraged to join the team by past outreach efforts.
Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.
4135 is dedicated to connecting with other organizations to spread its passion for STEM and is always looking for new opportunities to do so. One of our newer partnerships is with the Modesto Children's Museum. We created a successful program filled with fun STEM activities and are making plans to work upon last year's success. Our sponsors help the team prepare with internships, career guidance, and tours of useful facilities.
Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.
The Iron Patriots try to advocate for diversity and inclusion within the team. Women make up for 1/3 of Patriots, an impressive improvement compared to when the team had 0 women in its early years. We promote diversity through outreach at local middle schools and through the Girl Scouts robotics pathway. 60% of our team are ethnic minorities and 47.7% qualify for free or reduced lunch. To accommodate, free food is provided for everyone.
Explain how you ensure your team and the initiatives you have created will be sustainable.
4135 ensures initiatives continue to live on in the future through digital guides filled with the knowledge of upperclassmen to mentor the new generations of Patriots. We work hard on existing fundraisers such as our annual Spaghetti Dinner and other events to prepare for future students to build upon its success. 4135 also works on building shared drives of past CAD models, past essays, etc. as a means of sustainability.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.	
Our team’s female population is only around 35%; far below proportional. Within our own team, girls were being pushed aside or blamed for things done wrong. The problems were most prominent in our underclassman population. To combat this, we took time out of a build-season meeting to educate them on how sexist jokes and attitudes are not acceptable. This streak of justice did not stop within our team, our Girl Scouts program continues to ensure young girls their capabilities are endless.	
Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.	
4135 dedicates itself to fostering STEM excitement through its outreach, such as our presentations at local middle schools. Our initiatives and diverse composition underscore our dedication to inspiring a broader community in STEM within our rural area. Which is proven by the 25% of members who come from outside of Beyer. 12.6% of which are from other high schools in the area while the other 12.5% hail from schools outside of our district.	
Judge Feedback	
	Is there something more that we can do to improve our presentation? An area the team has an opportunity to improve. Something that really impressed the judges.
Essay	
Deep within the heart of the Central Valley, the Iron Patriots work together to combat the drought of STEM opportunities for local youth. Our success is not measured by blue banners but by the meaningful connections made through our impact. The Iron Patriots are a community team hosted at Fred C. Beyer High School, a Title 1 school in Modesto, California. Our team represents many other schools in Modesto and beyond, including home schooled students, charter school students, and students from outside the district. Since our founding in 2012, we have been tested by educational and socioeconomic challenges. Stanislaus County residents earn 17.3% less than the state average, and only 19.1% of adults hold a bachelor’s degree or higher due to limited educational opportunities. Within our team, 50% of members qualify for free or reduced lunch, 60% identify themselves as an ethnic minority, and –% are first-generation students. Despite these circumstances, 4135’s persistent innovation has allowed us to thrive. We have competed in the FIRST World Championships five times in our team’s lifetime, including three consecutive years. Maintaining effective communication and ensuring internal sustainability among 2 coaches, 11 mentors, and 55 students is no easy task. Much of our success stems from our collaborative, organized, yet decentralized team structure. Information is delegated through Discord, with sub-team captains communicating via designated channels to their respective groups. Mentors—many of whom are alumni, relatives, or community members—provide guidance and expertise, often staying with the team long after their initial connections because of their admiration for our mission. To ensure the team’s long-term sustainability, we have developed systems that prioritize knowledge transfer and leadership development. Sub-team captains, with the support of mentors, create detailed training curriculums for new students during the off-season. These programs are supplemented by “bluebooks,” shared drives containing outlines and guides for roles. These guides ensure that knowledge isn’t lost when members graduate, providing incoming	

students with a clear roadmap for success. For example, our business team uses these resources to train members in effective task management in their roles such as photographer, media manager, and outreach coordinator, preparing them to assume leadership positions in the future

Our commitment to sustainability extends beyond technical skills to leadership development. We cultivate future captains and sub-team leads by encouraging them to take on increasing levels of responsibility, fostering confidence and competence in guiding others. Alumni often return as mentors, ensuring that the team benefits from their experience while building a strong sense of community and continuity. These efforts allow us to adapt to challenges and grow, creating a lasting impact that stretches beyond our current roster of members.

We grasp the intense scarcity of youth-focused STEM education in Stanislaus County because we have first-hand experience with it. Our mission is to make it easier for future STEM students in our county to get accessible STEM education without having to jump through the same hurdles we did. To achieve this, we have spent over 140 hours on outreach since the end of last season, reaching 6,300+ people. The Iron Patriots are proudly “in our community, for our community.” We constantly are collaborating with the City of Modesto, Modesto City Schools, Stanislaus County Library, and the Modesto Children’s Museum to immerse K-8 audiences in STEM through engaging activities. We participated in countless local STEM and CTE nights at elementary and middle schools. We bring our dedicated outreach robot, Morris, and competition robots to captivate students and parents. For hands-on learning and engagement, we bring Beebots as well because they are easy to understand and navigate by younger kids. Outside of schools, we also hold booths at a local monthly event called First Fridays and the Stanislaus County Fair, engaging over 1,900 people and even gaining the attention of Senator Marie Alvarado-Gil.

Though a little more than half of the world’s population is female, our team’s female population is only around 35%; far below proportional. Thanks to the input and experiences shared by our team members, we realized there was a problem. Within our own team, girls were being pushed aside or blamed for things done wrong. We held a meeting with only female members and mentors to talk about how to handle the situation. We decided that the problems were most prominent in our underclassman population and took time out of a build-season meeting to educate them on how sexist jokes and attitudes are not acceptable just because they are “robotics kids.” After all, our team would not be where it is now without our 2 female coaches, 4 female mentors, and 6 female sub-team captains. This streak of justice did not just stop within our team, we wanted to empower younger girls to know that this behavior is not acceptable; we wanted to ensure they knew their capabilities are endless. To do this, we started a partnership with local Girl Scouts in 2022 to create a robotics badge pathway. Using BeeBots, hands-on activities, and teamwork exercises, we have helped over 60 Daisy and Brownie Girl Scouts earn their three robotics badges.

Our most hands-on outreach event is our annual STEM summer camp. In 2024, 64 students from grades 4-8 attended. We charge \$40 for the week—significantly less than the average \$100 fee of other STEM camps—as well as offer fee waivers. To promote sustainability, we donate old SPIKE Prime kits to Beyer students. This attitude of minimal cost to ensure accessibility in STEM experiences continues outside of our summer camp. Our students out of pocket cost to attend regional competitions is \$120 and \$250 for the world championships, a far cry from the \$1000+ average out-of-pocket cost of other team travel fees. Even then, scholarships to cover this travel fee are available to Patriots in need at any time.

Maintaining the low cost of our travel fees for members and STEM camp tuition could not have been achieved without the overwhelming support we receive from our community. Among our long list of recurrent outreach events, our annual Spaghetti Dinner fundraiser is the biggest financial contributor for our team. This long-standing community event attracted more than 700 attendees and raised over \$22,500 last year. During this student-led event, we strengthen connections with sponsors, relatives, friends, teachers, and community members while promoting FIRST and the opportunities it provides. Moreover, local businesses and relatives of current team members have donated around \$3,500, while organizations such as the Boyett Make Dreams Real Endowment Fund, DOW Chemical, Intuitive Foundation, and Ayera Tech have collectively granted \$22,500. As an incentive to sponsor us as well as to show our gratitude, sponsors’ names, and logos are prominently featured on the back of our team shirts

and displayed on our robot each year. Additionally, sponsors, government officials, school board members, and community supporters are invited on student-led tours of our shop and team events, like regional competitions, our spaghetti dinner, and more, via our newsletter, updates on our website, or a direct email invitation.

These efforts to interact with sponsors, officials, and beyond came to fruition when 4135's impact was recognized locally and beyond. In 2020, Congressman Josh Harder granted us a Certificate of Congressional Recognition. In 2024, we received certificates from Congressman Tom McClintock and Assemblyman Juan Alanis, who invited us to an Assembly meeting at the state capitol. Senator Marie Alvarado-Gil also awarded us a certificate after meeting us at the Stanislaus County Fair.

While our funding pales in comparison to other FRC teams in the prosperous state of California, the Iron Patriots have created a profound impact within our community with what we have. The connections and empowerment we've built extend beyond students' time on the team. Students have taken the valuable communication and teamwork skills they have learned and applied it to things outside of the team. In the last three years, students have participated in prestigious programs like NASA Ames Research Center, Hogan Manufacturing, and COSMOS. In the past two years, 99% of graduating Patriots pursued higher education, with 88% inspired to study STEM fields at schools like UCLA, UC Davis, Cal Poly SLO, and UC Berkeley. Alumni maintain strong ties to the team, often returning as mentors or attending kickoff and post-season celebrations.

Team 4135 is deeply committed to spreading our passion for STEM and FIRST. We do not measure our success through blue banners or certificates but by the most meaningful metric of all: connection.

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