FIRST Impact Award - Team 316

2024 - Team 316

Team Number

316

Team Nickname

LUNATECS

Team Location

Carneys Point, NJ - USA

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.

Our team has doubled to 22 students (23% female) in the last 3 yrs. Since ‘21, 13 graduates all attended STEM post-secondary education. We attribute this success to the partnership we have with Salem Community College (SCC). SCC provides our students with 18 free college credits, over 2 yrs, valued $3690, including FIRST and FRC program description in the college syllabus. This year, we have 14 team mentors, of which 64% are FIRST alumni, and 86% have STEM degrees or are working in a STEM field.

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

Our shop is located in Salem County, NJ which is located in a rural area with limited STEM resources. Since there is limited school and company support, we created the South Jersey Robotics (SJR) cooperative in ‘08. SJR helps recruit and set up new FLL and FTC teams, thus creating a pipeline for our team. It also provides an infrastructure for fundraising, obtaining college credits, and obtaining internships for our students. As such, our team is highly engaged and leads all SJR initiatives.

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?

We love inspiring students at our summer camps over the last 3 years as we’ve had 129 students in our ROBOQuest, STEMQuest and LEGO Masters camp. Our survey shows that many kids want to join FIRST. We also encourage others thru GEAR-UP, a federal college readiness program, in partnership with SCC. We create the lesson plans, and facilitate a 6-wk summer program, and monthly sessions during the school year. GEAR-UP continues to grow each year (‘21=30 students, ‘22=59 students, ‘23=63 students).

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

As role models, we like to inspire students at many outreach events to show the benefits of FIRST. Our robot demo, with 150+ attendees at Clearview High School, helped them get funding for a new STEM Lab. We also held a robot demo at Atlantic City High School that resulted in starting 2 new FTC teams in ‘23 for 20 students. Furthermore, we hosted an outreach event for over 900 kids at Penns Grove High & Middle Schools in Salem, which resulted in 1 new FLL and 1 new FTC team created in ‘21.

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

We started 4 Challenge teams, and 2 Explore teams. To support the FLL teams, we facilitate monthly Fall FastTrack sessions to provide near-peer mentoring, give programming advice, and provide feedback on their innovation projects. We started 3 FTC teams, 2 in Atlantic City and 1 in Salem County, the first teams in their areas. We mentored the new coaches, assisted with recruiting, and hosted a FTC Kick off ‘23. Our team mentor actively participates as an FTA and our students were FTAAs.

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?

We held our 8th annual STEAMFest event in ‘23. We focus communication for this outreach event in 5 southern New Jersey counties. This event includes a 5K Run, 1 Mile Walk, STEAM activities, robot demos by the local bomb squad, and we host a college fair (grew from 7 to 12 colleges) to encourage continued education. This event helps to show our community the stepping stones of their future potential with FIRST. We have seen this event grow from 100 runners in ‘21 to over 190 runners in ‘23.

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

In ‘22, we asked Spectrum Design, LLC to sponsor our team. To thank them, we recognized them on stage at our FRC Offseason event Duel on the Delaware. Spectrum was so impressed with our team that they got highly engaged and graciously offered 4 robotics internships and 1 FT job to our team. In addition, Spectrum helped us set up a new practice field in their warehouse in ‘24 and encouraged us to invite other FRC teams to practice with us, thus increasing awareness of Spectrum job opportunities.

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

We believe in finding programs to support females. We partner with FRC 1868 as m.e. FIRST ambassadors to provide free menstrual products at FIRST events to break down social anxiety and stigmas. SCC was impressed with this initiative and as a result, they set up a permanent lactation room in their lobby we can use during our FIRST events. Also, we reached out to Salem County VoTech School to coordinate with their Girls Who Code organization to offer JavaScript training planned for this Spring.

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

It's exciting to report the SJR pipeline works as 10 of our students came from SJR teams. To keep these students engaged and interested in returning, we created a FLL Recognition Night in ‘23 to recognize their achievements. Each FLL student and coach receives a certificate on stage with personal

recognition. In fact, 2 coaches received job promotions following their recognition. At this event, we also hand out flyers for our Registration day held in May to encourage their return next season.

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

Yearly we host STEAMFest in Nov. and prominently display sponsor names on the 5K race shirt, and invite them to set up info booths, and ensure they are recognized on social media. We also invite our sponsors to set up exhibit booths at Duel on the Delaware (our FRC Offseason event) as well as the FLL events we host (Robot Rumble and Little Sparks). In addition, we invite our sponsors to our yearly Registration Day in May so they can get hands on time with our robot during the onsite demos.

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

We have many projects that are hard to track and manage: Summer Camps, FRC Duel on Delaware, FLL Qualifier, Gear Up, Adaptive Device Program, Fast Track, Recognition Night, Registration Day, Outreach Events. To help us stay on top of these initiatives, we were introduced to the Project Management Institute (PMI) at Villanova University. PMI has taught our students about Gantt Charts, Critical Path, RACI charts, & Shortcut. We have started to use these tools to ensure we meet our commitments.

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

We are using our engineering skills to make an immediate impact on those in need. As a part of our Adaptive Device Program, we created prosthetic swim fins for adults with spinal cord injuries so that they can experience freedom of movement underwater. In ‘23 we created a child version and presented it to the Easter Seals Community and Disability Services. They were so impressed, they will be using these adult and child fins at their summer Camp Fairlee in Chestertown, MD for over 600 campers.

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.

Our students have made impactful connections with local companies while on the team. Last summer 4 of our students received paid engineering internships at Spectrum Design, a major sponsor of the team; 1 student received a paid IT internship at Fast Wave Networks, an SJR community partner; and 1 student obtained an internship at Widener University during an outreach event. It’s impressive to report the Widener internship is programming AI code for MRI scans seeking early detection of MS lesions.

Judge Feedback

Who/When	Feedback
Apr 07, 2024 10:18:22 AM EST	**We are always looking for our next engineering project to help those in need for our Adaptive Device Program. Do you have a problem or challenge we could consider?** **An area the team has an opportunity to improve.** **Something that really impressed the judges.**

Essay

Did you know our team has doubled in size over the last 3 yrs? With 22 students in ‘24, some may consider us a small team, but our passion for putting FIRST forward is mighty. For 26 yrs, we have been using our engineering skills to help disabled people in need, always working to create a positive impact that resonates in southern New Jersey and beyond. In addition, we support our community at all levels; from engaging elementary students’ initial introduction in FIRST, to guiding them towards college with an opportunity to gain 18 free college credits. Team 316 is eager to use their skills, and have created strong partnerships with many colleges and companies that have afforded them incredible STEM internships that will set them up for success as they continue on their journey to help others. Harmonizing with SJR to build FIRST Infrastructure & Sustainability In ‘08, Team 316 began a nonprofit cooperative called South Jersey Robotics (SJR) to aid our team in supporting and growing STEM programs in our local community. SJR helps to recruit and fundraise for all levels of FIRST. This infrastructure ensures we are sustainable, financially stable, and strong enough to maintain a STEM pipeline onto Team 316. To ensure we are aligned and helping to lead initiatives with the SJR Board of Trustees, Team 316 has a student board representative and several mentors who attend board meetings. Being under the umbrella of SJR provides a multitude of opportunities. For example, students of Team 316 serve as subject matter experts and role models by volunteering for all FIRST teams in the SJR. In addition, we facilitate SJR outreach events to introduce our communities, who lack accessible STEM programs, to the possibilities of FIRST. In fact, we started 2 FLL Explore teams, 5 FLL Challenge teams, and 3 FTC teams over the past 3 yrs; a significant growth of FIRST in these largely disadvantaged areas (Atlantic City and Salem NJ). Team 316 jumps to aid any SJR team, but we always ensure to provide weekly hands-on mentoring support for an FLL Challenge team who also meets at Salem Community College (SCC). We have received a lot of positive feedback for the monthly FLL FastTrack sessions we facilitate for all SJR Challenge teams (3-4/yr). At these sessions, Team 316 provides technical and programming support, project advice, and we facilitate team-building activities. Over the past 3 yrs,10 teams have attended FastTrack. We measure the success of this program by tracking which teams move onto the Southern NJ FLL Championship at Rowan University after competing in their qualifying event. We’ve had over 5 teams in the last 3 yrs moving forward in competition, including 1 FLL team advancing to the Houston Championship in ‘23. To ensure our SJR FLL teams have FUN, we enjoy hosting Robot Rumble (Challenge) and Little Sparks (Explore) festivals each year at SCC. In ‘24, to increase engagement and show impact, we created a scavenger hunt to display facts about our alumni (photo banners to showcase their college choice, degree path, and scholarships received). We also showcase our support of female health at these events as ambassadors for the Menstrual Equity movement initially created by FRC Team 1868 Space Cookies, an effort to help reduce social stigma and anxiety. SCC noticed our support for female health and decided to provide a permanent Lactating Room in their main lobby that we can use during our FIRST events. In addition, we reached out to Salem County VoTech School to work with their Girls Who Code organization to offer JavaScript training planned this Spring. We are very proud of our efforts to engage all genders within FIRST and we ensure everyone feels welcomed. As you may know, there is a high need to find FLL coaches, especially for science and tech educators in the disadvantaged Camden and Salem county areas. So in ‘23, we decided to host a yearly Recognition Event for both the SJR students as well as the coaches. We were happy to award two coaches with the Blazing a Trail Award for bringing FIRST robotics programs into their school districts. After these awards were presented we heard Dawn Wolfson, an English teacher in Camden, was promoted to director of STEM. Also after the assistant principal from Salem, Abner Mendoza, received his SJR award, he was promoted to principal. Now that's also making a positive impact for adults in our area! SJR ensures that we continue to #MakeItLoud in South Jersey. Since ‘19, we have supported GEAR-UP, a federal college-readiness program that gives students, in disadvantaged areas, the skills needed for success in post-secondary education. Team 316

hosts the STEM requirement of the program for SCC; we are 1 of only 8 locations to offer the program in NJ. The program brings middle and high school students from economically disadvantaged Penns Grove/Salem, NJ to our workshop. Team 316 developed lesson plans and taught GEAR-UP participants leadership, teamwork, and STEM skills in a safe, comfortable environment. To support this community, SJR is helping to provide a financial scholarship in summer ‘24, to ensure a returning GEAR-UP student has the ability to join Team 316. Our students enjoy using their engineering skills to make a positive difference through our Adaptive Device Program. We have created a variety of devices, our most successful being a swim fin to assist spinal cord injury survivors and wounded veterans, giving them the freedom to experience zero-gravity movement underwater. The fins were donated and used on an international dive in Honduras. After this success, we developed a pediatric version of the fins in the summer of ‘23 to expand the freedom they provide. In early ‘24, we connected with the Delaware Easter Seals who were interested in the swim fins, and wanted to use the adult and pediatric versions for Camp Fairlee in Chestertown, MD (an accessible and respite camping program for over 600 campers). Furthermore, the Easter Seals asked our students to revive the volleyball launcher that we donated as the first adaptive device project, which we are taking on this spring. Our goal is to spread the use of the swim fins, as well as seek new engineering challenges to help those in need. Team 316 has many projects in motion, and to help us stay on top of our initiatives, we were introduced to the Project Management Institute (PMI) at Villanova University. PMI has taught our students about project management skills (ie Gantt Charts, Critical Path, RACI charts, Shortcut). PMI is very interested in expanding their resources throughout FIRST Mid-Atlantic and beyond as they realize this is a valuable skill set for future engineers and we are helping to spread the word. PMI is very invested in SJR, and has offered to help facilitate our yearly STEAMFest event in ‘24. The event serves as a major fundraising and outreach opportunity for SJR and our team. This event includes a 5K Robot Run, 1 Mile Walk, STEAM activities, robot demos by local bomb squad, and a college fair. Over the past 3 yrs, we have grown the college fair from 7 to 12 different colleges, and the Robot Run has seen over 464 runners/walkers while also raising over $57K for SJR. This event helps to show our community the stepping stones of their future potential with FIRST. The Impact of our Engineering Instruments in the Real World Team 316’s long-running partnership with SCC has provided many impactful benefits. Most valuable is the college level effort SCC sees from our students. We are proud to have negotiated the alliance with SCC, which provides 18 free college credits over 2 yrs to Team 316 LUNATECS and Team 365 MOE team members, and specifically listing FIRST and a FRC program description in a college syllabus. On top of college credits, the experiences our students have gained through their participation in FIRST provide remarkable opportunities for the real-world application of their skills. Over the past 12 months, 7 of our students and recent graduates have earned internships in industry. For example, Maria D. gained an internship in IT at Fast Wave Networks, a community partner of SJR. In addition, Maria D. was able to utilize her college credits from SCC and her FIRST experience to boost her application for the competitive National Security Language Initiative for Youth through the U.S. Department of State to study the Korean language. She received a scholarship for the winter ‘23-’24 session, with plans to become a global technical translator post-graduation. Another student, Nikhil B., made connections with Widener University, during an outreach event the team supported at Clearview Regional High School. This connection earned him an internship where he worked directly with research professors to develop an AI model that identifies early signs of Multiple Sclerosis. He developed code to funnel raw MRI images through a pre-processing algorithm to standardize images before feeding it into a machine-learning model that detected this neurological disease. Additionally, 4 other students earned robotics internships and 1 alumni earned a full time job at Spectrum Design, one of our key sponsors. These internships had our students learning how to work in quality control, machine operation, and CAD. These real-world job experiences in the field of engineering were made possible through their connections made while in

FIRST. Our Crescendo to the Future Over the past 26 yrs, Team 316 has been singing with glee about changing the face of STEM education in Southern New Jersey. Not only are students from Team 316 developing to become emerging leaders, but they are recognizing and helping to encourage others in the community to follow in their footsteps. Our impressive impact has resonated throughout our community with the support of the SJR cooperative, community, company partnerships, and our overall passion to use our engineering skills for those in need.;