

TITANIUM ROBOTICS

Team 1160

San Marino, California



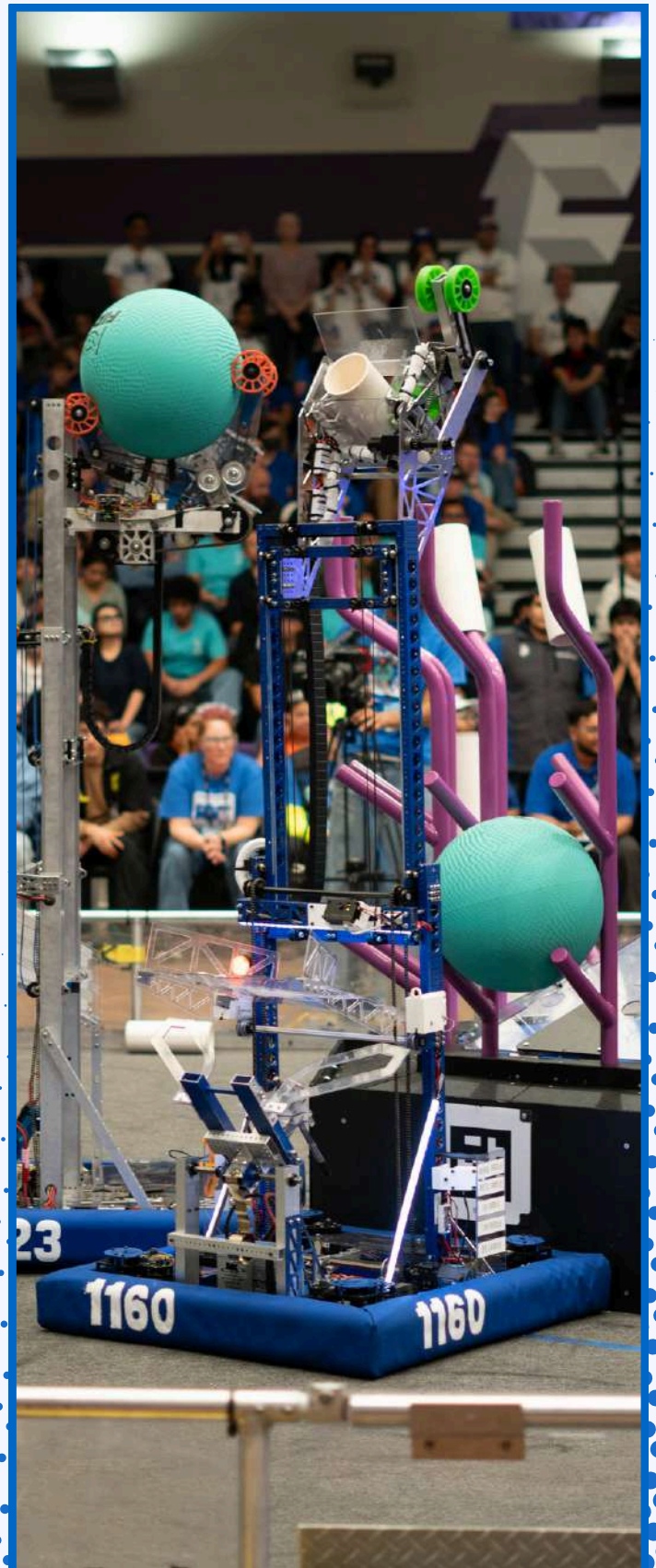
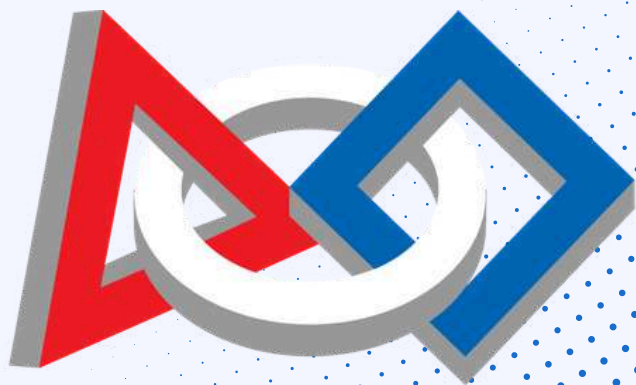
EST.
2003

2025
2026



WHAT IS FIRST?

FIRST, otherwise known as For Inspiration and Recognition of Science and Technology, is an international organization that empowers students through hands-on STEM experiences. Each year, high school teams worldwide design, build, and program industrial-sized robots to compete in themed challenges. Through the FIRST Robotics Competition (FRC), students learn engineering, teamwork, and leadership while building confidence and a passion for innovation.



MEET OUR ROBOT

S[Ti]ngray is our 2025 season competition robot. Last year's competition involved scoring "coral," which were PVC pipes, onto the "reef," a metal structure with prongs at various heights, removing "algae" balls from the reef, and climbing onto a cage to lift our robot completely off the ground. Our robot was able to score coral on all levels of the reef, except the lowest section. Weighing 145 pounds and traveling at a max speed of 11.5 miles per hour, our robot was capable of scoring coral on the reef every 15-25 seconds. To achieve this, we had a "swerve" drivetrain base which allows omnidirectional movement and a two-stage cascading elevator. Towards the final 30 seconds of the match, our robot climbs and lifts itself off the ground using our climber. We used a system of rack and pinions to drop our funnel, and our climber deployed using a winch system.



WHO ARE WE?

San Marino High School's Titanium Robotics (FRC 1160) is a fully student-led program that integrates engineering, business, and leadership into one unified experience. Our mission is to foster innovation, collaboration, and real-world problem-solving skills through robotics.



Our team is divided into two main sectors:

Engineering Cabinet:

Mechanical Engineering ·
Electrical Engineering ·
Programming · Computer-Aided Design.

Business Cabinet:

Event Coordination · Finance ·
Procurement · Graphic Design ·
Marketing · Media Production.

Together, we create an immersive environment where students grow as leaders, teachers, and innovators, ready to take on challenges both inside and outside the robotics lab.





HEAD MENTOR

Scott Barton

Years on the team: 19 years

Specialty: mechanical engineering & marketing

Current Occupation: Teacher & Advisor

ALUM MENTOR

Shawn Tsai

Years on the team: 4 years

Specialty: electronics & design

Current Occupation: Digital & Electronics Design Engineer



ALUM MENTOR

Wesley Su

Years on the team: 3 years

Specialty: structural engineering & electrical

Current Occupation: Structural Engineer

ALUM MENTOR

Nathan Lee

Years on the team: 1 years

Specialty: mechanical design & programming

Current Occupation: RnD Engineer & Software Developer



ALUM MENTOR

Teo Wilkening

Years on the team: 1 years

Specialty: mechanical engineering & controls

Current Occupation: Senior Controls & Automation Engineer

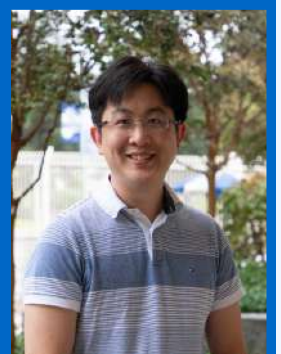
MENTOR

Benson Khau

Years on the team: 1 years

Specialty: programming

Current Occupation: Senior Software Engineer



MENTOR

Tyler Hand

Years on the team: 1 years

Specialty: mechanical design & programming

Current Occupation: RnD Engineer & Software Developer

MENTOR

Teri Bond

Years on the team: 2 years

Specialty: public relations & marketing

Current Occupation: Public Relations Consultant



MENTORS



PRESIDENT

Brandon Chuang
Grade: 12
Years on the team: 4



VICE PRESIDENT

Andrew Dang
Grade: 11
Years on the team: 3

VICE PRESIDENT

Joshua Lin
Grade: 11
Years on the team: 2



MECH CAPTAIN

Nathan Ho
Grade: 11
Years on the team: 2



MECH CAPTAIN

Aaron Tan
Grade: 12
Years on the team: 2



ELECTRICAL CAPTAIN

Athan Lee
Grade: 11
Years on the team: 2

ASSISTANT ELECTRICAL CAPTAIN

Eric Ji
Grade: 10
Years on the team: 2

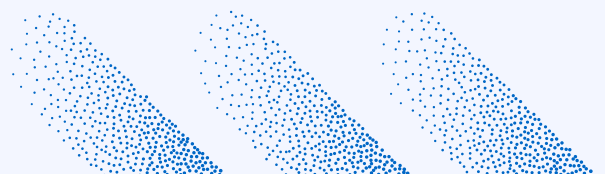


PROGRAMMING CAPTAIN

Alex Kurbatov
Grade: 12
Years on the team: 2



ENGINEERING





ASSISTANT PROGRAMMING CAPTAIN

Theodore Zee
Grade: 10
Years on the team: 2



CAD CAPTAIN

Jessie Tran
Grade: 11
Years on the team: 2

ASSISTANT CAD CAPTAIN

Vishwa Selvamani
Grade: 10
Years on the team: 2

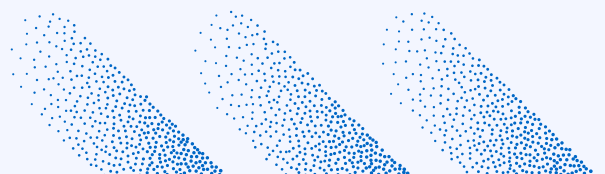


ENGINEERING OUTREACH

Olivia Deng
Grade: 12
Years on the team: 2



ENGINEERING (CONT.)





PRESIDENT

Nicholas Ko
Grade: 12
Years on the team: 4



VICE PRESIDENT

Miranda Fang
Grade: 12
Years on the team: 4

VICE PRESIDENT

Kenneth Chen
Grade: 11
Years on the team: 3



PRESIDENT EMERITUS

Sean Trisnadi
Grade: 12
Years on the team: 4



FINANCE OFFICER

Nathan Chang
Grade: 12
Years on the team: 2



FINANCE OFFICER

Kay Huang
Grade: 12
Years on the team: 3

PROCUREMENT OFFICER

Matthew Hung
Grade: 12
Years on the team: 4



PROCUREMENT OFFICER

Mina Chiu
Grade: 11
Years on the team: 2



BUSINESS





WRITER

Kyle Huang
Grade: 12
Years on the team: 4



SOCIAL MEDIA MANAGER

Charles Ausbrooks
Grade: 12
Years on the team: 3

VIDEOGRAPHER

Kevin Dun
Grade: 12
Years on the team: 1



VIDEOGRAPHER

Miguel Castellanos
Grade: 12
Years on the team: 3



GRAPHIC DESIGNER

Ethan Ko
Grade: 12
Years on the team: 1



PUBLIC RELATIONS

Cadence Chen
Grade: 12
Years on the team: 2



BUSINESS (CONT.)



AWARDS

Entrepreneurship Award & Industrial Safety Award (2014)
Imagery Award (2015)
Quality Award (2015)
Los Angeles Regional Finalists (2016)
Team Spirit Award (2017)
Quality Award (2018)
Gracious Professionalism Award (2018)
Safety Award (2022)
Creativity Award (2022)
Woodie Flowers Finalist Award (2022)
Imagery Award (2023)
East Bay Regional Winners (2024)
Aerospace Valley Regional Finalists (2025)



Reefscape 2025

OUR TIMELINE



- 2003

Titanium Robotics was founded by Dr. Jeng Yen, an employee at JPL, under the mentorship of Mr. Wyeth Collo, a biology teacher at San Marino High School. Originally called Team Titanium, we worked out of a 4x4 shed in a member's back yard.

- 2005

Team Titanium relocated into a trailer at Huntington Middle School, which better suited the team's needs.



- 2007

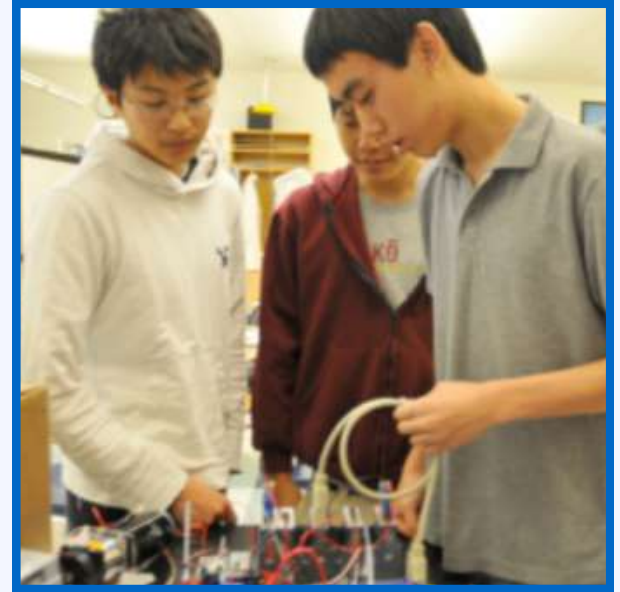
Mr. Scott Barton, a physics teacher at San Marino High School, takes over as lead mentor for Team Titanium. With experience in both business and engineering, he transformed the team into what it is now. He continues to serve as head mentor for the team. Under his guidance, Team Titanium transformed into Firebird Robotics.



OUR TIMELINE

- 2007

After buying many tools for our team and filling a then-vacant driver's ED classroom with them, the team officially got a dedicated workshop at San Marino High School to operate out of. Afterwards, we were provided with more tools from JPL mentor Mr. French and Boeing.



- 2010

B-roll videos of the team's robots were created and sent to all Los Angeles television stations. Furthermore, the face of a car was found on the side of the freeway. Named Brad, it remains in the robotics room.



- 2012

Feeling disconnected with our school and community and wanting a more modern and professional identity, we combined Team Titanium and Firebird Robotics to rebrand into Titanium Robotics.



OUR TIMELINE

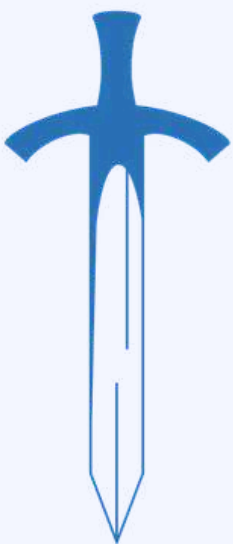


- 2014

Using our high school's advanced drama students as actors, a 30 second television commercial was shot by the team and played as a PSA.

- 2017

To bring awareness towards breast cancer, Titanium Robotics began the tradition of rebranding to pink every October. Through handing out pink ribbons and hosting a mural signing, we aim to bring awareness for breast cancer every year.



- 2025

We continue to operate as a student-led robotics team open to any student interested. Our team consists of 30 active members and a cabinet of 20 people, 25% of which are female. Our impact in our community and beyond is deep as we host numerous events to further our mission of spreading STEAM to everyone.

SOCIAL MEDIA

Our team manages several social media accounts in order to promote our fundraisers, activities, and us as a team.



TikTok



LinkedIn

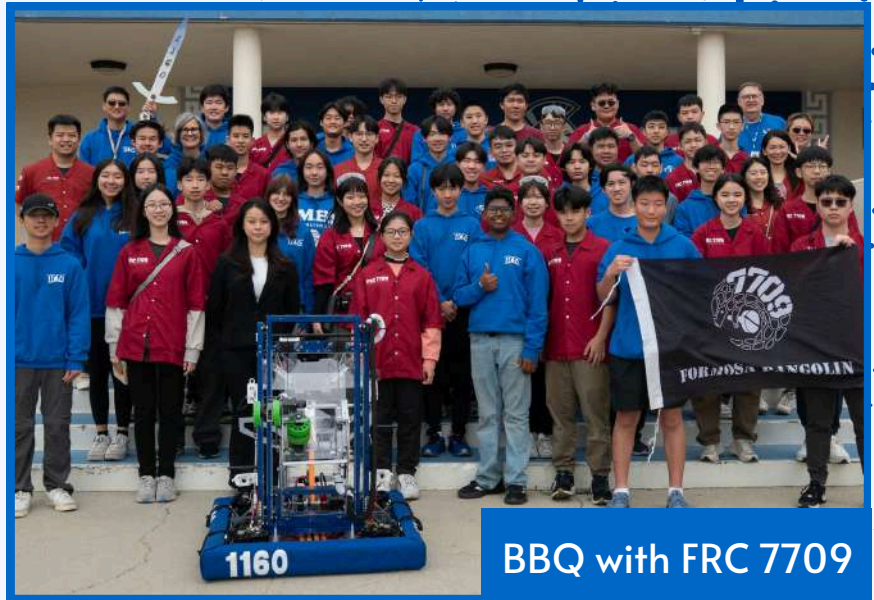


Instagram



IMPACT

We were thrilled to host FRC Team 7709 from Taiwan during their visit in 2025! We kicked things off with a fun barbecue, where both teams bonded over great food and conversation, then both teams were able to attend the Aerospace Valley Regional together. It was an inspiring exchange of ideas, teamwork, and culture.



BBQ with FRC 7709



Team 7709

Before the competition, we lent a room to help 7709 build their robot and provided last minute assistance leading up to the 2025 Aerospace Valley Regional. Also we gave them a short tour of the San Gabriel Valley, pinpointing natural landmarks and place of interests.

During the competition, we cheered each other on, celebrating every improvement. We also sat together, toured each other pit boxes and building team energy that carried us through the entire event. The collaboration between us transcends competition, fostering an international relationship through our shared passion.



Aerospace Comp.

IMPACT



Camp Del Corazon Movie Night

Every year, we have a partnership movie night fundraiser with Camp del Corazon, a nonprofit that hosts a week-long summer camp for children with heart disease. This year, we showed *The Fantastic Four: First Steps* and provided food, carnival games, and prizes for attendees. Every year we raise around \$2000 to help subsidize some costs for parents to send their kids to camp.

Titanium re-brands to pink in October in honor of Breast Cancer Awareness Month. Every year we sell pink merchandise, pass out pink ribbons, and publish infographics to spread awareness within our school. But, our biggest project of the month is our mural. Every year we paint a giant ribbon where students can sign with their (pink!) handprints during lunch. We then have our mural hung at our school throughout the rest of the month.



Pink Ribbon Mural Painting

IMPACT



STEM Speaker Event

Starting in 2025, in collaboration with our school's WiSTEM chapter, a student organization designated to bridge the gender gap between social justice and academic fields, we co-hosted a STEM speaker event in continuation of Pinktober for breast cancer awareness. We invited Dr. Grace Ting, an emergency physician at USC hospital, and Ryan Kinnett, a senior spacecraft systems engineer at Blue Origin to speak about their experiences in their respective fields.

Every year, we hold a donation drive to gather clothes and basic necessities for Journey House, a Pasadena organization that supports foster youth as they transition into adulthood. We set collection dates for day-to-day amenities and help organize donation drives with our school. At the end of the drive we help with the transportation of all donated goods, ensuring we provide meaningful support to our local community and those in need.



Journey House Clothing Drive

IMPACT



Boys Scouts Workshop

Fairly recently, our team partnered with Stanford student Wesley Marshall to host a Robotics merit badge for Scouts from Cerritos and Lakewood. Scouts learned about safety, team roles, and robot operations, then practiced skills like using power tools and exploring the team's competition and t-shirt cannon bots. While the program was for a merit badge, students came out with basic skills in CAD, programming, mechanical and electrical engineering.

Our district's elementary and middle schools participate in the FIRST LEGO League. We are currently mentoring one of our elementary school's teams and will occasionally pay them visits upon their request. Support ranges from brainstorming ideas, presentation skills/practice, and robot assembly.



Lego League Competition



IMPACT



Summer Camp



Robot Demonstration

Our team plans and executes an annual six week robotics summer camp for middle and high school students with all lessons designed by the team's cabinet. Lessons expose students to all fields of robotics (mechanical & electrical engineering, programming, CAD, marketing, finance, event planning), regardless of prior experience.

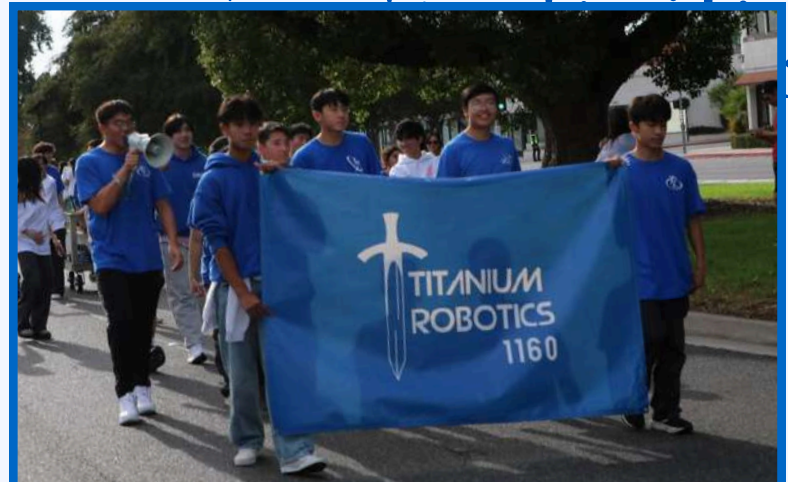
Lessons at camp are split between learning and hands-on activities, including practice work in areas like business and marketing. The camp culminates with a BBQ, giving participants and team members a chance to bond and celebrate before heading into the rest of the summer break.



Field Presentation

IMPACT

During our school's homecoming parade, our team walked with our T-shirt cannon, [Ti]rone, firing shirts to spectating students, parents, and residents along the streets. We were able to spread school spirit and represent FIRST while also having fun — an awesome way to celebrate our community, share our love for engineering, and represent our team.



High School Homecoming Parade

After our qualification to the FIRST Championship, our district invited us to a board meeting at the district offices to recognize our team for the accomplishment. As an added bonus, KTLA reporters also covered our accomplishment, showcasing our hard work and amplifying impact on the community.



Board Meeting

Every week at our school's football games, our team brings the energy with our T-shirt cannon! Between plays and at halftime, we roll out our custom-built launcher and fire shirts and other concessions into the crowd to show off our engineering prowess. Whether we win or lose, it's always a great way to represent our team.



Homecoming Football Game

IMPACT



On 4th of July, our team proudly participated in our city's local parade. We marched with our T-shirt cannon, buckets of 3D printed trinkets, and a cart full of mementos. The team designed event-specific merch to pass out and handed out trinkets to spectators along the route. In the end, the team was able to celebrate a successful trek with a cold treat and fireworks to close the night.

Every year Titanium Robotics hosts a general recruitment meeting to introduce new students to the team's mission and upcoming projects. Members were introduced to the different subteams, and shared past accomplishments. The meeting created an open, welcoming space for students to learn how they could get involved.



Titanium Robotics at San Marino High School took part in Club Rush by setting up an inviting booth. Aimed towards funding upcoming projects, the team sold refreshing matcha lattes from Factory Tea Bar, a local tea spot. The team was able to draw a steady crowd of students eager to support the club while enjoying a refreshment on the hot day.



IMPACT



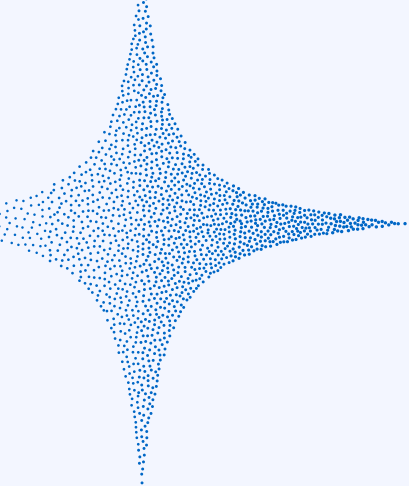
Trunk or Treat at Lacy Park

Titanium participated in our city's annual Trunk or Treat event at our local park. We decorated a car and handed out candy to in costume passerby. While we were mostly a stop for candy, we were also able to speak to interested residents about our mission and vision to spread FIRST ideals.

Titanium works closely with Carver Elementary School's First Lego League team to better prepare them for competitions, while furthering their pursuit of STEAM. Whether it be through touring our workshop or operating our t-shirt cannon we strive to get the youth involved as much as possible. Through our countless hours mentoring the team, they ended up winning first in the Innovation Award this past year!



Meeting with local FLL team




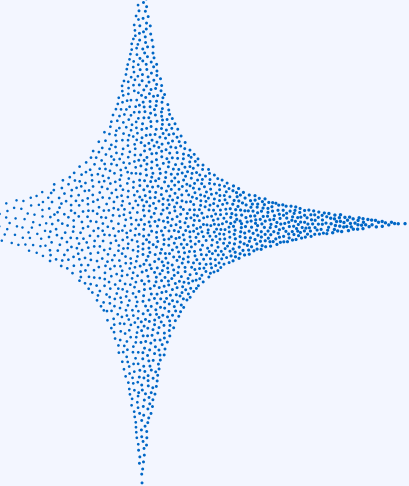
EXPENSES & FUNDING

Every year, we have substantial costs required to maintain our operations and continue providing meaningful learning opportunities for our 40+ members. Furthermore, our costs only increase every year as we avidly try to incorporate more advanced and innovative materials and tools into our workshops. These are necessary to provide a more nuanced and vivid hands-on experiences for our current members as well as future generations. Because of this, we actively seek support through sponsorships, partnerships, and grants throughout the school year.

Our financial team reaches out to 50+ potential sponsors and grants annually. Despite these numerous attempts, we receive limited funding and still require more in order to provide a well rounded team experience.

While we do not ask for donations out of need alone, we recognize that meaningful collaboration with organizations and supporters allows us to continue making a lasting impact.





EXPENSES & FUNDING

Overall Expenses

- one competition robot a year \$14,000
- Competition fees \$6300
- Apparel/branding \$4,000
- Banquet/outreach events \$1,080

Total: \$25380

Robot Expenses

- Motors \$600
- Swerve Modules \$3,000
- Control System \$1,000
- Pneumatics \$150
- Misc. Electronics \$200
- Raw Material \$250
- Mechanisms \$1,500
- Miscellaneous \$600

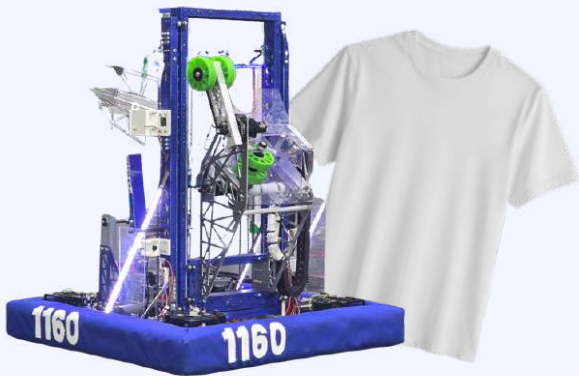
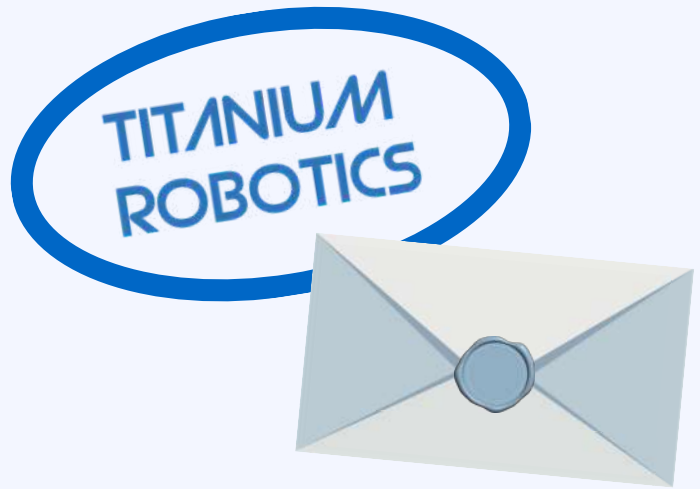
Total: \$7,000

SPONSORING

Anything you can do for us helps and will not go without notice! In return, you will receive the team's tax ID number, a thank you note written by the team, and invitations to the events we hold throughout the year. In addition, depending on the value of your donation, you will also receive:

\$100-\$249 - Bronze:

Donations in the bronze tier include: your name/company logo on the sponsors page of our website, handwritten thank you letter from engineering and business presidents.



\$250-\$500 - Silver:

Donations in the silver tier include: all benefits from previous tiers, a free T-shirt from that year's merch, and your name/company logo on our robot.

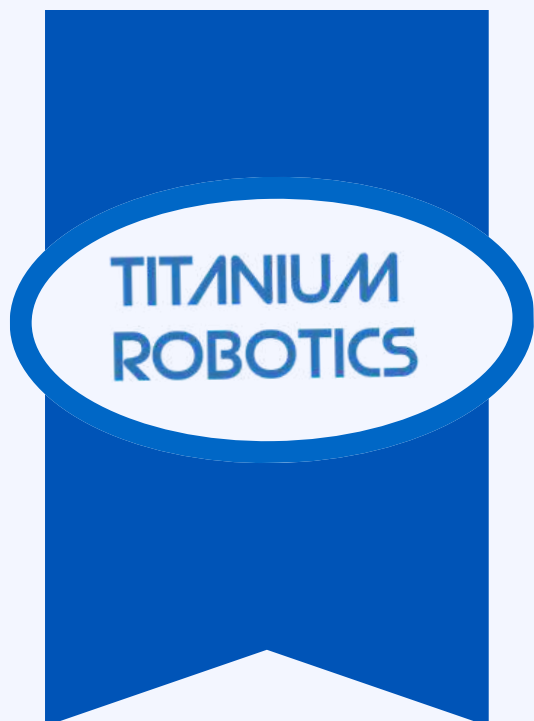
\$500-\$999 - Gold:

Donations in the gold tier includes: all benefits from previous tiers, a free hoodie from this year's merch, and free admission to the annual team banquet.



SPONSORING

(CONT.)

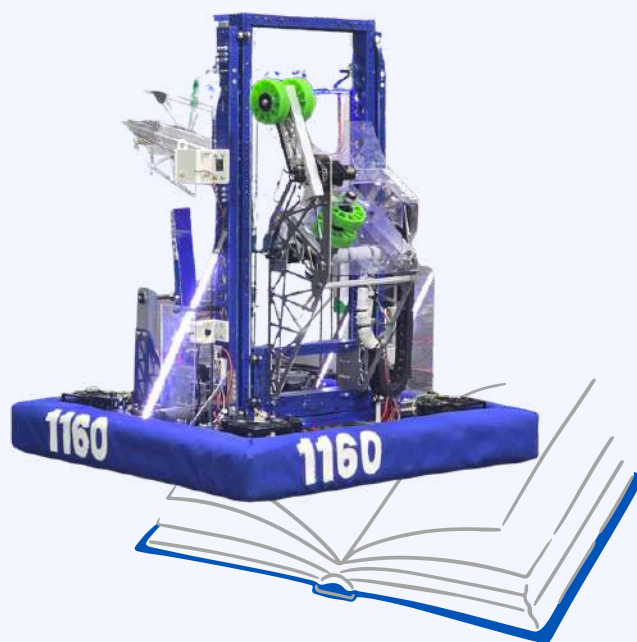


\$1000-\$2499 - Diamond:

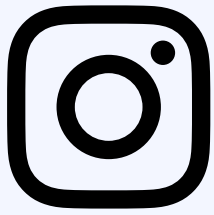
Donations in the diamond tier includes: all benefits from previous tiers, your name/company logo will be placed on select business materials (ex. banners), metal replica of the Titanium team logo (produced from our CNC machine), an appreciation plaque, and a framed and signed team photo.

\$2500 and above - Titanium:

Donations in the Titanium tier includes: all benefits from previous tiers, a 3-D printed copy of our year's robot, and a scrap book signed by Presidents, Vice Presidents, Mentors, and Mr. Barton.



CONTACT



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USA

