



CRUSADER ROBOTICS

Sponsorship opportunities

Mayer Lutheran High School

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TEAM OVERVIEW

Who are the CRUSADERS?



22-23 Team Picture

We are a robotics team of twenty-four students, based in Mayer, Minnesota. We participate in a robotics program called FIRST Tech Challenge (FTC). The Mayer Lutheran Robotics team was founded in 2010 and is led by coaches Ben Schulteis and Matt McClintock.

Season Goals

Design and Engineering

- € Continue to use CAD software to help us design our entire robot and specific parts for 3D printing and fabrication
- € Learn new techniques to increase productivity when designing/building.
- € Expand our knowledge of programming by experimenting with new techniques, software, and sensors to improve robot accuracy during matches.
- € Continue to document our entire design process in our engineering notebook, in a way that allows it to be a tool for our team.

Outreach

- € Connect with companies by promoting *FIRST Robotics*, sharing what our team has done, and recruiting professional mentors
- € Fundraise to meet our budgetary needs this season.
- € Mentor our new team members to help them grow in their knowledge and be engaged in the MLHS Stem Club.

- € Empower younger children to see the fun and importance of STEM in our summer Camp.

Team Organization

This year we grew, bringing our total to twenty-four members. Enabling us to offer three teams: Team 4650 and Team 5713. Team 4650 consists of upper classmen or returning members. Team 5713 consists of 10th graders. Team 24187 consists of 9th and 8th graders.

The STEM room is open Monday-Friday from 3:05-5:30 for all robotics members to use. Each day a team is given priority access to tools, computers, and mentors, but all members are welcome to come in and work on their robot, their personal engineering projects, and gather as a community to socialize.

Matt McClintock and Ben Schulteis act as both coaches and mentors to advise these teams.

About First Robotics

FIRST (For Inspiration and Recognition of Science and Technology) is a youth organization founded in 1989, created to help inspire kids to explore the world of STEM (Science, Technology, Engineering, and Math). First has curated many opportunities to fuel young people in educating themselves in the field of STEM, while building lifelong qualities and skills such as confidence and STEM knowledge. They currently have four robotics programs: Jr. FLL for students in grades K-3, FLL for students in 4th-8th grade, FTC for students in 7th-12th grade, and FRC for 9th-12th graders.



About FTC

FIRST Tech Challenge (FTC) is a robotics program designed for students in grades 7-12. In the game, teams will design, build, and program robots that accomplish different goals in that year's competition. These robots must comply with many different rules, the primary being that the dimensions of the robot must be less than or equal to 18"x18"x18".

Teams must document this entire process in an engineering notebook which holds many different sets of information. The notebook provides information on team history, team members, parts of the robot, programming solutions, team



budget, and contains diagrams and calculations to help future teams generate ideas.

Teams can build their robots out of many materials. Some teams can choose to make most of their robot from metal, where some teams choose to make most of their robot out of plastic. Robots are programmed in Java or block-based programming and are often designed using Computer Aided Design (CAD) software. Robots compete in a two versus two match, each team has an alliance partner that will switch in between matches. Each year has a new challenge; the 2022-2023 season is named Power Play.



This program teaches students technical skills, including practical design, building, and programming a robot, as well as non-technical skills including marketing, documentation, fundraising, and public speaking. Teams are judged at each tournament based on these aspects of the team. The FTC program emphasizes maintaining a well-balanced team. As part of this, teams participate in outreach: spreading FIRST programs in their community and connecting with STEM businesses.

TEAM HISTORY

We are entering our 12th season of FTC since 2011. Over these twelve years more than fifty students have had the opportunity to participate in the Engineering and Design process.



OUTREACH IMPACT



We have created many opportunities to impact our community. Every summer we have a STEM camp for kids in 4th to 8th grade. We use that opportunity to teach kids about some of the fun parts of STEM by teaching problem solving skills. A more recent project that we have started is *Parts for Jesus*. This is a program where we make all sorts of parts to help people in the community. While we have just started this

initiative, we helped a church choir when they needed a stand for their choir and handbell books.

A staff member's daughter was supposed to be the flower girl at a wedding, she broke her arm days before the wedding. We created a basket that rested on her sling without adding any pressure on her arm.



Team Impact

The goal of our Crusader Robotics program is to provide opportunities for students to grow in confidence and learn new skills that will prepare them for success.

Team member Grant, a ninth grader shared: *“Crusader Robotics has taught me that everyone has something to offer, all of which are equally important. When everyone uses their talents and skills to create something together, something amazing comes out. I’ve been able to apply this outside of robotics.”*

Collin, one of our seniors, has this to say: *“Here at Crusader Robotics I learned that I am a leader. I never realized it before but now that I’m here I have been able to harness this ability, which has made me more confident in myself. Which has led me to overall be a kinder person to others in helping them and encouraging them.”*

Isaac, also a senior added, *“Robotics at Mayer Lutheran has helped me feel more confident in myself and, as a freshman, robotics helped me make friends in a new place. I have learned many skills while I have been in robotics, both physical skills and the skills to interact with all of the people that compete alongside us.”*

From one of our alumni, Sarai shared! *“Last year I just observed the Robotics Team. I thought that I would never want to be a part of Robotics. I put some thought into it and coming into senior year I thought, ‘Why not?’. I am so happy I made that decision. I have had the opportunity to see people, new and old to robotics, working together and creating something amazing! I am grateful to be on the Crusader Robotics Team.”*

Sponsorship Opportunities

We are grateful to all our sponsors and invite you to join our team. Sponsorship levels are explained below:

Sponsorships include the following benefits for the 23-34 school year.

Silver Level Sponsor (\$100)

- Company name and logo on the Crusader website

Gold Level Sponsor (\$250)











- Company name and logo on robot cart and poster board

Platinum Level Sponsor (\$500)

- Company name and logo on robot

Diamond Level Sponsor (\$1,000+)

- Company name and logo on Crusader Robotics apparel

	Silver	Gold	Platinum	Diamond
Apparel				
Robot				
Robot Cart				
Website				

WHY WE NEED SPONSORSHIPS

With the Crusader Robotics program, we desire to provide opportunities for our members to learn about the engineering process by problem solving, collaboratively stepping through an iterative design process by creating robots.

Funding of the robotics program is achieved via fees, fundraisers, donations, and sponsorships.

The activity fee and small-scale fundraisers help to maintain the program by paying for registration fees, specific game fields, and new parts.

We seek out sponsors and donations to purchase parts that expand the capabilities of the types of robots we can design. This past year we received enough support to allow our robotics program to purchase a new 3d printer with a large print bed, a small CNC system, and a new radio control system for quickly prototyping robot tool systems.

Looking forward we hope to secure additional donations or sponsorships to advance opportunities for our members by:

- Expanding our part library to include parts from other manufacturers.
- Invest in upgrading our CNC to be able to cut and mill larger parts.
- Purchase tools to allow our team members to be take less time to complete simple tasks.
- Purchase and maintain a safe laser cutter with fume extraction.
- Purchase new parts to continue to support the expansion of our robotics team.