



FIREBEARS TEAM #2846

“At school I learn English and Science but nothing prepared me for Robotics!”
— team member Patrick Neri

Roseville FIRST Robotics



About our mission

The FIREBEARS aim to reinforce education in STEM (Science, Technology, Engineering, and Math) to create a better future for everyone. Sanctioned by the national FIRST (For Inspiration and Recognition of Science and Technology) organization, we work hard to show the importance of science and engineering through our creation of a robot and outreach to the wider community. Our goal for the future is to create a path for the young in hopes that they will begin to admire our heroes—the scientists, mathematicians, and engineers in our world.

About our team history

The Roseville FIREBEARS Team #2846 was founded in fall 2008 with 19 students and three mentors. Boston Scientific came forward to serve as the lead sponsor and provide a lead mentor. As the team began showcasing their work, the Roseville Robotics Team soon earned a reputation of success and quality.

- April 2009: 10,000 Lakes Regional, finalists
- August 2009: Minnesota State Fair Competition, 1st place
- November 2009: Twilight Star Mini Regional Competition, 1st place
- April 2010: 10,000 Lakes Regional, Dean's List Finalist Sean Grogan (top individual award); quarterfinalists
- November 2010: Twilight Mini Regional, 3rd place
- April 2011: Dean's List Finalist Ben Prather
- April 2012: Dean's List Finalist Ben Wiggins; Imagery Award

About our team

During the 2012-13 season, Roseville FIREBEARS Team #2846 has a young and enthusiastic team of 38 students in grades 9-12. This year the team has 35 percent females, the highest percentage ever for the team. Even though this is just the fifth year of the Roseville FIREBEARS Team #2846, many members consider their group a family instead of just another robotics team. But, the FIREBEARS aren't unique only because of their family-feel, this bunch of students meets year-round to build a robot and build excitement in the community for science, technology, engineering and mathematics. Team members can now earn a letter in robotics—just like sports.

Students on roster: 38

- Male: 25
- Female: 13

Student grade breakdown

- Grade 12: 4
- Grade 11: 10
- Grade 10: 15
- Grade 9: 9

Mentors: 10



“I only joined the team because it's a challenge.”
— team member
Collin May

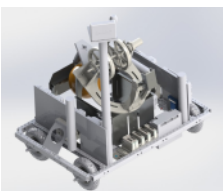
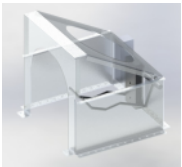
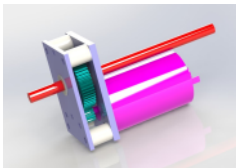
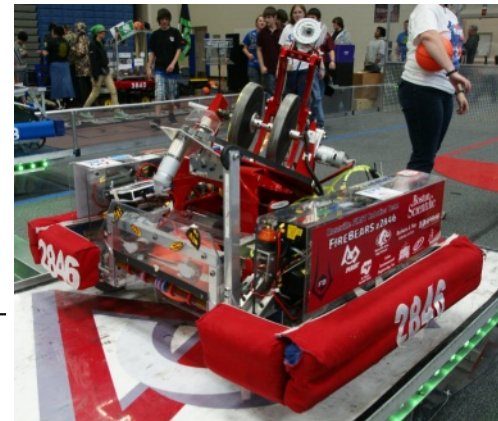
“I've learned that a failure isn't always a failure.”
— team member
Alex Olson

Roseville FIRST Robotics

About our robot

After hundreds of hours of student and mentor work, the Roseville FIRST Robotics Team #2846 built a robot during the 2011-12 season that makes the entire community proud. Work on the next robot begins in January 2013.

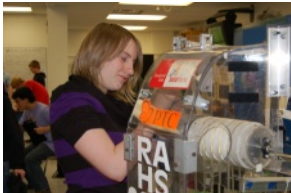
- Robot drawn in CAD
 - able to try several designs without actually building
 - send files directly to fabricator
- Drivetrain is custom fabricated
 - lower center of gravity makes it less likely to tip over
 - uses pneumatic wheels for traction and to absorb shocks
 - custom chain tensioners
 - skid-steer design
- One axle turreted shooter for maximum accuracy
 - welded and powder coated
 - PID loop to control shooter speed
 - shooter's red color matches team branding
 - uses custom designed and fabricated gearbox
- Effective hammer design for lowering bridge
 - first time use of pneumatics for shooting and actuating hammer
- Software advanced to most sophisticated level ever
 - implemented vision software control of shooter-- software aims and shoots
 - uses Java software implementing Command framework
 - used version control
 - used an Controller Area Network (CAN) Bus Electrical Circuit to connect drive motors and other motors
 - makes running robot easier because when a command is given, the operator gets feedback on the commands
 - clean wiring



"I love going to regional competitions and meeting new teams."
— team member Kaley Bush

"If only we were as smart as our robot we created."
— team member Bennett Hanson

Roseville FIRST Robotics



About our outreach and partnerships

Over the last four years, the team has begun many new efforts to raise the profile of the robotics team and make it part of the school and community culture. A few of the highlights include:

- Homecoming—Roseville Area High School
 - robot is part of pep rally-2010, 2011, 2012
 - presents the crowns to the Homecoming king and queen-2010, 2011, 2012
- Freshman activity fair
 - recruited 10 new freshmen-2011
 - recruited 9 new freshmen-2012

- Open House-Feb. 2012
 - showed off robot to about 100 parents and community members
 - invited Boy Scout and Girl Scout troops
 - invited all teachers and staff throughout the school district
 - news release to community newspaper

- Minnesota Robotics Invitational founders
 - 20 teams from throughout the state competed at Roseville Area High School
 - awarded \$1200 in scholarships to FIRST team members

- Participated in summer parades and community events
 - State Fair competitions—Education Building-2009, 2010, 2011, 2012
 - Roseville Rosefest parade-2010, 2011, 2012
 - Little Canada Canadian Days parade-2011
 - Grand Opening of the new Ramsey County Library in Roseville-2010
 - Mahtomedi homecoming parade-2010

- Mentored new teams
 - helped Mahtomedi team build excitement for a new team formed in fall 2010 and continue to serve as a resource
 - helping start two VEX Robotics team at the Roseville Parkview Middle School



About our sponsors

Boston Scientific has continued to serve as the team's lead sponsor, and over the last two years the team has garnered in-kind support and sponsorships from the Roseville Community Fund, Roseville High School, Thomsen Reuters, SolidWorks, Oakdale Precision, Inc., Summit Machine, Inc., Vincent Metals, Barbara J. May Attorney at Law, Arden Environmental Engineering, Inc., Xcel Powder Coating, Reel Precision Manufacturing, Vista Technologies, and Reflections Printing.

The team continues to seek new sponsors for sustained team funding in future years.