2021-2022 Team Description

Robot Casserole
FIRST Robotics Competition Team 1736

www.robotcasserole.org

Sponsored by:

CATERPILLAR

HOW TO USE THIS DOCUMENT

This handbook communicates general background on Robot Casserole as a team, and the FIRST Robotics Competition it participates in.

It serves as our team statement of purposes, and the outcomes we anticipate for those who spend time working with our team. If you are considering joining the team, we recommend you read it to understand what we are all about!

If you have any questions or concerns, please don't hesitate to reach out to us! Our email is frc1736@gmail.com .

Thank you again for considering Robot Casserole!

ROBOT CASSEROLE SPONSORSHIP

Robot Casserole is a Caterpillar Inc. *FIRST* Robotics team open to all greater Peoria area high school students.

Mentors and students of the 2020 Robot Casserole Robotics Team 1736 include:

- Caterpillar employees
- Amren employees
- City of Peoria
- ICC Students
- Richwoods High School Students
- Illinois Valley Central High School Students
- Peoria Area Home Schools Students

Caterpillar Inc. Provides:

- Work space for the team to conduct *FIRST* related activities
- Engineer/Professional mentoring
- Program Leadership
- Materials and supplies
- Financial support

This sponsorship is provided for a purpose: Robot Casserole is a key component in Caterpillar Inc.'s STEM Pipeline. We help fulfill the company's goals of teaching STEM concepts to the greater Peoria community, in the hopes of creating a more verdant society. We also hope that students will consider Caterpillar Inc when searching for future employment opportunities.

ROBOT CASSEROLE'S MISSION

As FIRST Team 1736 Robot Casserole, our mission is to inspire and foster students' natural curiosities and ingenuity on a technical challenge within real-life constraints that promotes the development of leadership, teamwork, problem-solving, technical, creative, software, and communication skills. We wish to be a prominent and visible force within our community that encourages Gracious Professionalism, cooperation, volunteerism, and hands-on STEM-based learning.

ROBOT CASSEROLE'S TEAM GOALS

- Inspire students to explore, experience, and appreciate technology, math, science, and engineering through hands-on participation in team activities
- Prepare students for leadership roles through shared decision making on the team
- Promote the ideals of FIRST in all that we do
- Increase community awareness of engineering education opportunities
- Promote teamwork skills
- Promote cooperation and volunteering
- Introduce students to positive role models
- Compete annually for the Chairman's Award (the highest award within FIRST)

FIRST OVERVIEW

WHAT IS FIRST?: FIRST (For Inspiration and Recognition of Science and Technology) is a non- profit organization that was founded to inspire and excite young people about science and technology by bringing together professional mentors with high school students from around the U.S. and several foreign countries.

THE ORGANIZATION: FIRST was founded in 1989 by inventor and visionary Dean Kamen. In the first year 28 teams participated in the competition which was held in a high school gymnasium in New Hampshire. In 2018, there were 3,650 teams from 48 states and 26 countries (with over 3,000+ corporate and institutional sponsors) which competed in 56 regional events and the Championship events in Houston & Detroit. FIRST also sponsors Junior FIRST LEGO League, FIRST LEGO League and FIRST Tech Challenge competitions along with a series of education- related projects and programs. FIRST is a 501 (c) (3) organization headquartered in Manchester, New Hampshire.

THE VISION: Dean Kamen, founder of FIRST, imagines a day when the act of invention – that is, the work of scientists, engineers and technologists – is as revered in the popular culture as music, athletics and entertainment are today. The FIRST vision is to inspire in young people, their schools and communities, an appreciation of science and technology and an understanding that mastering these can enrich the lives of all.

HOW IT WORKS: Through a large, successful and growing community of educators, parents, community leaders, engineers, volunteers, and sponsors, FIRST builds alliances to support its vision. A part of that vision is to inspire and prepare the future talent pool, workforce, and leaders to become capable, technically-literate citizens of tomorrow. FIRST designs accessible, innovative programs that build self-confidence, knowledge and life skills while motivating young people to pursue opportunities in science, technology and engineering.

FIRST CORE VALUES:

- **Discovery:** We explore new skills and ideas.
- **Innovation:** We use creativity and persistence to solve problems.
- **Impact:** We apply what we learn to improve our world.
- **Inclusion:** We respect each other and embrace our differences.
- **Teamwork:** We are stronger when we work together.
- **Fun:** We enjoy and celebrate what we do!

FIRST ROBOTICS COMPETITION

THE GOAL: The FIRST Robotics Competition challenges teams of students and their mentors to design and build a robot in a six-week timeframe, using a standard “kit of parts”. The team has to analyze the game and strategize what type of robot would perform well. Typical teams meet months in advance of the building period to learn basic skills and be better prepared. The goal isn’t simply to build a robot; the robot is a vehicle for learning much more. The real goal is building a collaborative team, a supportive community and a solid strategy for problem solving during the competition.

TEAMS: The average team competing consists of about 25 students and 6-12 adult mentors; however, entire schools, school districts and communities are involved with **FIRST.** Typically a corporate sponsor assists in funding the team. In the case of Robot Casserole, that corporate sponsor is Caterpillar Inc.

WINNING: FIRST redefines winning. Winning comes through excellence in design, demonstrated team spirit, gracious professionalism, and the ability/maturity to overcome obstacles. Winning comes through the building of partnerships with other students and professionals, and between schools, businesses, and communities.

FIRST IN 2020: The 2020 FIRST Robotics Competition season begins with the release of the kits and game rules on Saturday, January 4th 2020, and will involve over 6500+ teams from every state across the U.S., as well as 30+ other countries. The teams and competition bring together students of different levels of achievement, different racial and social backgrounds, boys and girls, from inner cities across America as well as from rural communities. Joining the high schools and colleges/universities participating on teams will be over 3,000 sponsors representing some of the most well-known and highly regarded companies in the world.

THE EVENTS: Historically, there have been over 65 regional and district competitions scheduled to take place in February through March, across the U.S., Canada, and Israel. In addition, two Championship Events have been held in Detroit, MI and Houston, TX. The Championship event draws participants from across the country and around the world and includes the competition itself, a FIRST Hall of Fame that spotlights model teams, and a conference that provides educational seminars for both students and mentors. Teams, fans and spectators will number well over 30,000 for these 3-day events.

FIRST: POSITIVE IMPACT AND MEASURABLE DIFFERENCE

FEEDBACK: Studies undertaken by several universities as well as thousands of stories support the positive impact of *FIRST*. The results of hard work and serious play include lives changed forever and minds opened to new knowledge and opportunities through participation in *FIRST* programs. The evaluation work is producing important data about the impact of the *FIRST* program on high school students, including:

- ***ATTITUDE***: Improvement in student attitudes about science, math, teamwork and the working world.
- ***SELF-IMAGE***: Improvement in students' self-image, particularly among underrepresented groups.
- ***TEAMWORK***: Highly positive attitudes about teamwork, including increased respect and support students accord one another.
- ***SELF-CONFIDENCE***: Student self-confidence improves after their *FIRST* experience.
- ***CAREER PLANNING***: Student attitudes about the working world are significantly more positive.
- ***PROFESSIONAL*** Two-thirds of student participants indicate interest in working
- ***RELATIONSHIPS***: for one of their team sponsors and one fifth actually had plans to work for one of their team sponsors in a summer internship or a part-time job.

HIGHER EDUCATION: In 2019, over $80 million in college scholarships were available to students participating in FIRST. In many cases, whether or not scholarship is the key, FIRST provides students with the inspiration and confidence they need to consider college and to pursue educational and professional opportunities. Several of our graduated students have taken advantage of the FIRST scholarships and are currently enrolled in engineering/science/technology curriculums in college.

ROBOT CASSEROLE TEAM HISTORY

History of Team Awards:

2006 – Chicago Regional: Xerox Creativity Award
2007 – Wisconsin Regional: GM Industrial Design Award, Semi-Finalist
2008 – Wisconsin Regional: Judges Award
2009 – Wisconsin Regional: Chrysler Team Spirit Award
2010 – Wisconsin Regional: Chrysler Team Spirit Award
2011 – Wisconsin Regional: Chrysler Team Spirit Award
2012 – Wisconsin Regional: Imagery Award
2013 – Boilermaker Regional: Chrysler Team Spirit Award & Industrial Safety Award
2014 – Central Illinois Regional: Chrysler Team Spirit Award
Wisconsin Regional: Chrysler Team Spirit Award
2015 – Midwest Regional: Chrysler Team Spirit Award
2016 – Central Illinois Regional: Finalist & Imagery Award
Midwest Regional: Winner
World Championship: Imagery Award (Hopper Division)
2017 – Midwest Regional: Imagery Award
2018 – Central Illinois Regional: Imagery Award
Seven Rivers Regional: Winner & Imagery Award
Detroit World Championship: Quarterfinalists (Carson Division)
2019 - Midwest Regional: Imagery Award & Woodie Flowers Finalist Award
Central Illinois Regional: Spirit Award
2020 - Miami Valley Regional: Innovation in Controls Award
Central Illinois Regional: Woodie Flowers Finalist Award
2021 - Infinite Recharge @ Home Challenges - Industrial Design Award

SUBTEAMS & COMMITTEES

Sub-Teams

- **SOFTWARE, CONTROLS:** Develop software for robot automated & tele-operated control and human interface. Assist in troubleshooting of robot operation and controls
- **ELECTRICAL:** Develop electrical system for robot and controllers. Design and develop pneumatic systems for robot.
- **MECHANICAL:** Design, develop & test solutions based on game strategy.
- **CAD:** Convert sketches to solid models to assembly models to working drawings Fabricate parts Assist in the assembly and troubleshooting of robot Create parts list and pricing
- **MEDIA/BUSINESS:** Document the team through video and photos. Create and distribute robot release videos**.** Create and distribute team music video. Assist imagery and awards with various media.

Committees

- **SAFETY**
  Safety in all we do, first priority Train team about safety during the season and at the events Assist with hands-on training for tools & power tool operation Establish procedures for reporting an accident or safety violation
- **OUTREACH**
  Coordinate community relations events and document team outreach through photos and videos. Recruit new students through demos and interactive presentations.
- **SPONSORSHIP**
  Maintain relationships with existing sponsors through telling the story of how their investment benefits both their company and the greater Peoria area. Recruit new sponsors to help expand Casserole's mission.
- **COMPETITION AWARDS**
  Assist with team identity and imagery. Design and develop peer awards. Design, develop and organize the competition pit.
- **ESSAY AWARDS**
  Create Chairman's, Woody Flowers and Dean's List award submission.
- **SCOUTING**
  Track team performance with scouting app. Analyze data to determine who our best alliance would be. Speak with teams during competitions to learn about other team strategies. Create a winning game plan and strategy.

PARENT INVOLVEMENT & MENTORING

Parents are expected to help out in any way they can. **This is a very important time in your child's life as they start searching for a future college major/career. You can be a big part of that decision by participating or mentoring on the team!**

Parent Helpers: Participation during regional events will be greatly appreciated. Helping with meals and snacks or assisting with travel to and from outreach events are easy ways you can contribute to the success of the team. For Saturday work days, we will be serving lunch at the warehouse. If you can help with service or provide a portion of the meals, contact the team at frc1736@gmail.com . We are actively looking for a volunteer to coordinate the meals and parent helper volunteers. Reach out if you are able to help! It is also strongly encouraged and appreciated to volunteer with the regionals we are attending. We will send out links to volunteer at these events prior to traveling to the regional.

Mentors: Casserole has a long history of having many parent mentors! Even if you can only join in for a year, or part of a year, your help would be greatly appreciated! It's a great way to spend time with your children and their friends. The efforts of these mentors must be student-focused and within the spirit of *FIRST*. There are many opportunities to mentor our team's students:

Mechanical Machine Design - Electrical Design & Wiring - Software Development & Programming - CAD – Design, Drafting, Animation - Metalworking & Part Fabrication - Carpentry & Construction - Project Coordination - Communication & Public Relations - Video & Graphic Publications - Event Planning - Machine Shop Management - Strategy Development & Coaching - Travel Coordination - Scholarship coaching and submission

COMMUNITY OUTREACH

Robot Casserole keeps active in the local community, as they host and participate in events, make demonstrations and support other math and science-related programs for the area's students. Examples of these events and activities include:

Introduce a Girl to STEM Day (Oct-Nov)

Career Spark (Oct)

FIRST LEGO League Mentoring (Sep - Dec)

FIRST LEGO League Regional Tournament (Dec)

Engineering Week @ Peoria Riverfront Museum (Feb)

Peoria School District Summer Lego Robotics Camp (Jun)

Robo Rumble @ Peoria Riverfront Museum (Jun)

GoBabyGo (Fall/Spring)

For more information about Robot Casserole and demonstrations, please contact us at frc1736@gmail.com .

GENERAL TEAM ACTIVITIES

Training Activities

During preseason we will focus on training and learning skills through interactive activities so you are prepared for the competition season. Following are some of the areas of focus:

- Safety
- Mechanical engineering & fabrication
- Computer Aided 3D Design/Modeling
- Programming
- Pneumatic & electric wiring/circuits design
- Media, photography, and video
- Web design
- Team building & leadership
- Preparing presentations and building a team image

STUDENT REQUIREMENTS & OPPORTUNITIES

OPPORTUNITIES

There are many rewards for being a committed Robot Casserole team member. Robot Casserole students have many ways to be involved with the team. They are encouraged to participate in community events, and during the fall they participate in the team events, training, and meetings.

1. Travel Opportunities
   - Historically, the team travels to one “away” regional. The location is usually somewhere in the Midwest - Chicago, Wisconsin, and Ohio have all been visited recently. **Travel plans are still in flux for the 2021 season.**
   - Potentially the team will travel to Detroit, MI for the championships

2. Scholarships
   - There are MANY scholarships available for *FIRST* team members. Check out http://www.firstinspires.org/scholarships for details.
   - In 2020, there was $80 million in scholarships available to *FIRST* students.

3. Internships
   - The experience students are exposed to opens doors for internships within Caterpillar and other high-tech companies. See your guidance counselor and www.caterpillar.com and select the “Careers” tab. Additionally, work with the mentor team in the **December** timeframe to understand what opportunities exist and get recommendation letters

4. Experience
   - Many corporations across the nation are participating in *FIRST* and want to hire *FIRST* students. Being on a *FIRST* team will expose students to these corporations, provide them with opportunities to meet some of the mentors who work for these corporations, and help teach the students skills that these companies desire.
   - Additionally, some colleges (Purdue, University of Illinois, etc.) offer college credit to engineering students who help mentor *FIRST* teams.

TEAM CONTACTS AND INFORMATION

- Robot Casserole Co-chairs frc1736@gmail.com

- Robot Casserole Website: http://www.robotcasserole.org/
- YouTube https://www.youtube.com/user/FRC1736
- Facebook https://www.facebook.com/FRCteam1736
- Twitter https://twitter.com/FRC1736
- Pinterest https://www.pinterest.com/frc1736business/
- Instagram https://www.instagram.com/frc1736/

- *FIRST* Website: http://www.firstinspires.org
- Phone #: 800-871-8326 or 603-666-3906
- Regional Director Susan Lawrence sklsumgrad@comcast.net

- ILLINOIS *FIRST* Website: https://www.firstillinoisrobotics.org

- Caterpillar Coord. **Tim Koch:** Caterpillar_STEM@cat.com