Team 254 Robotics

Team Handbook

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Introduction

Welcome to Team 254! We are excited to have you as part of Team 254: The Cheesy Poofs. This handbook contains the key policies, goals, grading system, and expectations of Team 254 and its members along with other information you will need.

The success of Team 254 in robotics and its numerous other activities is due to the dedication of our members. Your participation is essential to fulfilling our program's goals. Every member's commitment and responsibility keeps our team running smoothly. We hope that on Team 254, you will acquire and continue to use such life skills through college and your future career.

Mission Statement

We aim to equip a community of students passionate about science and technology with the skills and initiative to become the next generation of leaders and create positive change in their respective career fields.

Joining the Team

Team 254 is limited to 80 student members to ensure maximum opportunity to participate. 60 members return from the previous year, and 20 students not on the team last year also join. Membership is open to all students attending Bellarmine. Any interested and motivated student is eligible to apply, and all new students will be provisionally accepted on a trial basis. After a brief trial period, only twenty new applicants will be retained and the remaining will be put on a waitlist. Decisions are based on attendance during the trial period.

Members who are returning from the previous school year must submit an application. Decisions are based on the prior year's project hours, event attendance, dedication to the team, as well as the written application. Following the announcement of the team roster, students invited to join the team must turn in the completed contract at the end of this handbook to a faculty advisor.

Students not accepted in previous years are allowed to re-apply for the next year.

About

Team History

Team 254 was founded in 1998 in partnership with NASA Ames Research Facility. After Broadway High School's closure in 2000, Team 254 moved to Bellarmine College Preparatory. While the team's student members changed, The Cheesy Poofs have continued to flourish.
Notable accomplishments and events include:

- 1999 : 254 begins competing in the FIRST Robotics Competition
- 2001 : 254 moves from Broadway to Bellarmine College Preparatory
- 2004 : 254 wins the FRC Chairman's Award, FIRST's most prestigious award
- 2009 : 254 begins competing in the VEX Robotics Competition
- 2011 : 254 wins the VEX Excellence Award, VEX's most prestigious award
- 2011 : 254 wins the FRC World Championship
- 2013: 254 brings its total FRC regional win count to 24

What We Do

Team 254 members participate in a number of projects, many of which are described below. Any member is welcome to participate in any project.

FRC Build

Members work with faculty advisors and mentors to design and build advanced robots to compete in the FIRST robotics competition. After the game is revealed, FRC robots are quickly built using computer-aided designs and advanced metalworking equipment. Build occurs during an intensive six-week period. Team 254 builds two robots, a competition robot and a practice robot. At the end of the build season the competition robot is bagged and tagged while the team continues to work on the practice robot until competition.

VEX Build

Members work with the VEX Robotics Design system to build and program robots for competition. Members are split up into sub-teams, each headed by two student VEX Team Leads, and moderated by mentors, faculty advisors, and student leaders. During the season, members build and program robots to meet the game's challenges. After several weeks of build, members compete in a series of tournaments with the goal of qualifying for the VEX State and World Championships.

Programming and Controls

Members develop software for both FRC and VEX robots. Robots are programmed using advanced control algorithms in RobotC, C++, and Java.

Scouting and Strategy

Members are responsible for strategy at both VEX and FRC events. Scouts evaluate the strengths and weaknesses of the competition, develop match strategies, and determine which robots to pick during alliance selection.

Zero Robotics

Members compete in the Zero Robotics SPHERES Challenge, hosted by NASA and MIT. In this event, the team submits a program to autonomously control a simulated SPHERES satellite as it competes against AI submissions from other schools. The winning teams will see their programs run on actual SPHERES on the ISS Space Station.

Graphic Design

Members create sponsor decals for the robot, sponsor and competition awards, team apparel, and merchandise. They also create publicity materials including banners, fliers, handouts, and displays.

Computer Animation

Members produce animations for the both FIRST and VEX competitions. These animations are submitted for various awards, such as the safety animation award and the game animation award. The team primarily uses Autodesk 3ds Max, a professional-grade modeling and animation package.

Submissions

Members write and enter submissions for several FIRST and VEX awards such as the FIRST Chairman's Award and the VEX Excellence Award. They also write grant applications for sponsorship.

Documentation

Members take photos and video footage of team events for use in animations, publicity materials, and award submissions. Members also create articles for the Bellarmine community and content for the team website.

Outreach

Team 254 has a long history of working with other teams and community organizations. Members on the team mentor middle school VEX/FLL teams, volunteer at STEM events, and provide support to other FRC teams.

PR and Marketing

Members work to raise awareness about the team and attract new sponsors by generating publicity material. The team creates awards to give to sponsors in recognition of their support of the team.

Website

Members maintain the team website to assist in public relations, communication, and to compete in website competitions. The team also develops and maintains web applications to assist with internal and external team functions.

Finance

Members create and update the team budget, and tracks all purchased materials and equipment. The team generates a comprehensive business plan and works with the PR and Marketing team to find and write grants to secure additional sponsorship.

Other

During the course of the season, members may suggest ideas for other projects by speaking to student leaders, mentors, and faculty advisors.

Eligibility

In order for students to be eligible to participate on the team, they must:

- Turn in the completed contract at the end of this handbook
- Maintain academic eligibility
- Comply with rules established in the Bellarmine handbook
- Participate with the team for the duration of the school year

Team Dues

Due to the high cost of materials, registration, and other fees associated with robotics, each team member is expected to contribute $120 annually for team dues. This is billed through the family's Bellarmine account. In return, each student will receive two team t-shirts and a laser-engraved name-tag. Families unable to financially meet this requirement should contact a faculty advisor.

Member Obligations

All team members are responsible for and will be graded on the following:

Projects

Team 254 works very much like a small business with a wide variety of projects to complete in different fields. Hours spent during build or other projects listed above are tracked.

Meetings

Whole team meetings are held at 2:54 pm on Tuesdays in Andrade Theater. It is recommended that members attend all meetings. Other project groups may also have meetings as announced. Certain meetings will be declared critical meetings as a prerequisite for attending competitions or other events.

Mandatory Events

During the year, all team members are also required to attend the following events:

- VEX Kickoff – Beginning of September
- Bellarmine VEX Tournament – Volunteer or Participant
- FRC Kickoff – Beginning of January

The team leadership may announce other mandatory events during the year. If you cannot attend a mandatory event, speak with a faculty advisor at least a week in advance.

Tournament Eligibility

Eligibility is dependent on project hours. 40 hours are required to attend tournaments during the first semester, and 100 during the second.

Workshops

Throughout the year, workshops are held to teach the team needed skills. Workshops will count towards project hours.

Outreach

Throughout year the team participates in demonstrations and other outreach events. This is a way to interact with and enrich the community. Outreach is important on Team 254, and counts towards project hours. It is highly recommended that members participate in outreach events.

Grades

To recognize involvement, each member will receive a grade on their transcript. All members of the team are committed to remain on the team for both semesters and may not withdraw once enrolled.

Breakdown

- Project Hours – 80%
- Reflection Paper – 20%

Project Hours

Project Hours will form the bulk of a member's grade on Team 254. Project hours can be earned by attending build sessions, sessions for other projects such as graphic design, submissions, and website, attending workshops, and by attending outreach events.

During the first semester, members must contribute a minimum of 40 hours to receive a passing grade of a C and be eligible to attend competitions. 80 hours are required to receive an A.

During the second semester, members must contribute a minimum of 80 hours to receive a passing grade of a C, 100 to attend tournaments, and 120 to receive an A.

Any member failing to meet the minimum requirement will be removed from the team.

Reflection Paper

Members must write a reflection paper each semester. Members will be given full credit for discussing the following:

- Summarize a project you worked on which had the most impact on the robotics team
- Discuss a positive experience or accomplishment on this project
- Discuss a difficult challenge on the project and how you overcame it or how you might prevent such challenges in the future
- Discuss how you could improve or what would you like to work on in the future

General Information

Behavior

Team 254 expects that all members behave maturely and professionally at all times and comply with the standards of Bellarmine College Preparatory and NASA Ames Research Center. Members whose behavior is below the standards of Team 254 will face disciplinary action.

It is important that all team members remember that whenever they are engaged in a team-related activity, whether online or in person, they are representing Team 254. Their actions will reflect upon the team, our sponsors, and Bellarmine College Preparatory. Team members should treat their teammates, members of other teams, and the general public with kindness and respect at all times.

At competition, those who are not members of Team 254 but are cheering for or representing the team in any way, such as parents and friends, must adhere to these guidelines as well.

Submissions & Publications

To maintain the team's high standards of quality and imagery, the leadership team must approve any documents or media pertaining to the team prior to their release. This includes award submissions, publicity materials, news articles, pictures, videos, and posts to social media or discussion forums.

Confidentiality

Team 254 prides itself on its competitive excellence and on being a source of inspiration and mentorship for other teams. The team shares ideas and design concepts with other teams and offers help to anyone who asks for it. However, the team believes that helping others work through the engineering process is much more effective than giving away fully-formed solutions and designs.

Members are not permitted to disclose any ideas, designs, documents, photos, or videos to anyone not affiliated with Team 254 without the explicit approval of the leadership team. Confidentiality is taken very seriously and is punishable up to dismissal from the team.

FIRST Robotics Competition

The FIRST Robotics Competition is an advanced competition which begins in January and occurs for the remainder of second semester. The entire team works together on a single robot design, with subgroups existing for each aspect of the robot. Members can participate in any part of the design or build process. No prior experience is necessary.

- FRC Build will occur wholly during the second semester and partially during the first semester at the discretion of the leadership team.
- Build sessions will start after 5:30 during weekdays and after 1:00 during weekends. Build will not occur on Mondays except at the discretion of the leadership team.

VEX Robotics Competition (VRC)

Challenges for the VEX competition are released in late April. However, the team does not begin any strategic analyses or design work until the beginning of the school year. Members can participate in any part of the design or build process. No prior experience is necessary.

- Members may not choose which teams to work with and will be assigned into predetermined sub-teams. If they have any questions or concerns about the assignment process, they should contact the leadership team.
- Weekly build sessions will occur only during the first semester on Monday, Tuesday, and Thursday from 3:00 - 6:00. Build outside of this time is not permitted.
- Practice time will be given during the second semester at the discretion of the leadership team. Members are not allowed to build during this time.
- VEX builds will occur only at the Bellarmine Robotics Lab.
- VEX robots must only be built with parts and equipment owned by Team 254. All equipment and unused parts must be returned at the end of the year. Teams are responsible for missing items.
- Every team must successfully pass a design review moderated by student leaders and mentors in order to begin building their robot. Furthermore, teams must pass subsequent design reviews in order to perform major robot changes at the discretion of the VEX Technical Lead. It is the responsibility of VEX Team Leads to schedule design reviews.
- VEX Robots must be fully built and programmed at least one week before a tournament in order for them to be eligible to compete. This is to ensure that VEX teams get at least one week of driver practice before a tournament. VEX teams are not allowed to make major robot changes during tournaments.
- Decals for VEX Robots must be compliant with the Identity Standards and approved by the Director of Media & Digital Communication.

Facilities

NASA Ames Robotics Exploration Lab

Team 254's founding sponsor, the NASA Robotics Alliance Project, provides a large workspace at NASA Ames Research Center. Team 254 has an 80% size FRC practice field as well as a small machine shop, workspace, computer lab, and meeting area. NASA authorized identification badges are required to access the lab. Directions are provided on the team website. For more information about the lab and badge access, see the team website.

Bellarmine Robotics Lab

Team 254's onsite robotics lab is located on the field side of the Liccardo parking lot. The lab features a machine shop area, two full sized VEX fields, eight workspaces, a computer area, and a meeting area.

Rules & Guidelines for Team Facilities

- No member is ever to work without a mentor or faculty moderator on site.
- Food and drink is allowed at team facilities only at the discretion of an adult mentor or faculty advisor. Members must use common sense when given permission to have food and drink.
- Any member intending to use any potentially dangerous tools must have completed a machines tools training session conducted by a mentor.
- When finished using a tool, it must be returned to its designated location in the lab. At the end of every work session, all tools and materials must be put away.
- If a member leaves before a work session is over, that member must clean for at least fifteen minutes before leaving. Members must announce to a mentor when they begin cleaning for credit.
- Members are not allowed to leave the lab before notifying and signing out with a mentor or faculty advisor.
- If a power tool malfunctions or breaks, it must be reported to a mentor immediately.
- Electrical devices of any kind may **never** be powered by daisy-chaining cords or power strips.
- Always wear safety glasses and other pertinent safety equipment when operating power equipment or are near somebody who is operating power equipment.
- Loose hair and long clothing must either be tied back or removed before a member is permitted to use any machine tools.
- Members must partake in a robotics related activity if they are in the lab. If a member is caught not participating in build they will be asked to leave the lab. Horseplay and games will not be tolerated.
- All members must abide by the guidelines set forth by the Bellarmine transportation form. If you are unsure of your transportation status, check with a faculty advisor.
- Faculty, mentors, and NASA personnel always have the final word in any situation where safety is at stake. This is due to the hazardous nature of Robotics.

- All applicable rules of Bellarmine College Preparatory apply at the NASA lab or any place where robotics work is being done.

Failure to comply with the established rules will result in disciplinary action by adult team members and/or dismissal from the lab.

Identity

Team 254 is well known throughout the robotics community and has a very distinct identity associated with it.

Identity Standards

Team 254 has developed a set of comprehensive identity standards to help maintain and preserve our strong team identity. The policies outlined in the identity standards are binding and must be followed for all team appearances and communication. For more information, see the Identity Standards posted on the team website.

Dress Code

The dress code must be maintained at competition, all off-season events, and robot demonstrations. Maintaining the dress code is recommended on the school days before and after a robotics competition in order to raise awareness at school. For more detailed information, see the Identity Standards.

Photography and Media

All members must be willing to be photographed and appear in team-related publications.

Travel & Competition

Payment

Certain competitions require travel. This will require payment from members. Members will only be refunded if another member takes the spot. If payment is an issue, speak with a faculty advisor.

Roles & Responsibilities

Prior to competition, members will be divided into drivers, pit crew, scouts, and documentation. It is vital to the success of the team that members maintain the roles that they are given. When at competition, members are not permitted to engage in unrelated activities, such as homework or games. However, members are encouraged to watch matches, meet other people, and look at other team's robots.

Behavior

Behavior that is deemed below the standards of Team 254 will result in punishment by a faculty advisor or adult mentor. Severe infractions may result in an immediate flight or bus trip home at the expense of the team member, and/or dismissal from the team.

Transportation

Local Events

Several events such as FRC build, outreach, and other events within Santa Clara county may not have transportation scheduled by the team. For these events, it is the member's responsibility to arrange transportation.

NASA Lab

During FRC Build Season, rides will be arranged for most weekdays to the NASA lab by school bus, van, or licensed parents based on needed attendance. Members must sign-up for these rides. Students and parents are allowed to drive themselves to the lab with permission from Bellarmine.

Silicon Valley Regional (FRC)

A bus will take members from school to competition on Friday. Members who wish to attend Thursday and Saturday of competition must arrange their own transportation.

Long-Distance Tournaments

Bellarmine will arrange all transportation. Members will pay Bellarmine by check. All student members must travel with the team. Members must sign up well in advance for all tournaments.

School Absences

If a member will miss school due to a robotics event, it is that member's responsibility to inform teachers of an absence ahead of time and arrange for completion of missed work. That member must also fill out a planned absence form one week prior to the date of absence.

Team Leadership

Team 254 is managed by a leadership team consisting of student leaders, adult mentors, and faculty advisors. The leadership team's duties go beyond those of regular members. This team makes administrative decisions, plans events, and manages projects. Every member of the leadership team puts in hundreds of hours of work behind the scenes to ensure that the team operates smoothly.

Leadership Meetings

The leadership team meets weekly year-round. The students meet after school on Fridays for a mid-week action item update. All leadership meetings are closed to students not on the leadership team. However, students can approach members of the leadership team with relevant concerns.

Leadership Team Selection

At the end of each school year, a selection committee consisting of mentors, faculty advisors, and alumni will choose next year's leadership team. The selection process is based on previous leadership experience, dedication, expertise, and a written application. Leadership roles are modified every year.

Leadership Roles & Responsibilities

President

The team president is responsible for keeping team unity, making sure the leadership team functions as designed, staying in contact with sponsors, and being a team spokesperson.

FRC Technical Lead

The FRC technical lead oversees the overall robot design process and technical aspects of FRC as well as organizing workshops and ensuring that team members are adequately prepared for the season.

VEX Technical Lead

The VEX technical lead is responsible for organizing VEX build related activities, managing and organizing VEX Team Leads, and ensuring members get the most out of the technical aspects of VEX.

Director of Competition & Operations: FRC

The director of competition for FRC is responsible for FRC competition preparation including scouting, pit construction, transportation, meals, and participation.

Director of Competition & Operations: VRC

The director of competition for VEX is responsible for VEX competition preparation including scouting, pit construction, transportation, meals, and participation.

Director of Programming & Controls

The director of programming is responsible for the programming and electronic functions of FRC and VEX robots as well as the Zero Robotics Competition.

Director of Media & Digital Communications

The director of media creates all publicity and robot related media, maintains the Identity Standards, and manages the team website.

Director of Finance

The director of finance is responsible for team part orders, business plan, and documentation of all incoming and outgoing grants, donations, and transactions.

Director of Public Relations

The director of public relations is responsible for maintaining and improving the team image, identity, and presence within the community, and maintains the team's outreach program.

Director of Documentation, Submissions, and Marketing

The director of documentation is responsible for the creation and archiving of all team content including the website, recording of competition, award submissions, grants, and the team blog.

Communication

All members are required to have an active e-mail address that is registered with the team. They must also check it daily. All other messages will be communicated to members during team meetings or posted on the team blog.

Team Website

The team website is located at team254.com. All members must create a website account with the team and must check the website daily.

Email Group

When a parent or member creates an account on the team website, that member will automatically be added to the team mailing list and will begin receiving email updates from Team 254.

Team Blog

The team maintains a blog on the team website. Members are required to check the blog daily. Please read the blog before messaging a student leader for more information. More than likely, it will have already been posted on the blog.

Contact Information

Contact Information for faculty advisors, mentors, and all student members will be posted in the directory on the team website.

Authority of the Handbook

The rules and policies set forth in this handbook are binding and must be followed by all team members. The handbook may contain appendices including the Team Identity Standards. These documents are binding as well. The leadership team has the authority to modify the handbook at any time. The team will be notified of any modifications. All students must acknowledge the Authority of the Handbook by signing the contract and form below.

Student Contract

By signing below I acknowledge and understand all points listed below:

- I have read the handbook describing Team 254: The Cheesy Poofs and agree to comply with the policies outlined within.
- Participation in the program requires attendance at mandatory events, and I will comply with the schedule of said events.
- The equipment used during construction of the robot can cause serious harm injury if not used correctly. I understand that members are not permitted to use any piece of equipment until they have been instructed on its safe use and are not permitted to use any piece of power equipment without adult supervision.
- As long as my parents have signed the Bellarmine liability release/consent form, I will only ride in a car driven by an adult mentor, faculty advisor, approved parent or student, or myself to any robotics function.
- I agree and consent to allow my photographs, name, or comments to appear in media related to Team 254.
- I understand that violation of any of the policies above is punishable up to and including dismissal from the team.

_____

Student Name

_____

Bellarmine Student ID

_____

Email

_____

Student Signature Date

_____

Parent Signature Date

Transportation Liability Contract

	Yes	No
1) My son has permission to operate a family owned motor vehicle to and from any school sponsored activity inside Santa Clara County.		
2) My son may transport other students to and/or from any school sponsored activity inside Santa Clara County.		
3) My son may travel in a vehicle operated by a Bellarmine parent or guardian to and/or from any school sponsored activity.		
4) My son may travel in a vehicle operated by another Bellarmine student to and/or from any school-sponsored activity inside Santa Clara County.		
5) My son may ride in a privately owned vehicle operated by a faculty advisor or adult mentor to and/or from any school-sponsored activity.		
6) My son has permission to use public transportation while accompanied by a school official or to travel to or from any school sponsored activity.		
7) I, as a Bellarmine parent/guardian, am willing to drive my son and other students to a Bellarmine sponsored activity when my son or other students are participating in that activity		

_____

Student Signature Date

_____

Parent Signature Date

*Note: This is **not** the Bellarmine Transportation Form, and is only for mentor reference.