# Bensalem High School

# TEAM 5401

## The Fightin' Robotic Owls
## Team Handbook 2023-2024

# Table of Contents

# Mission Statement

We cultivate students' interest in STEM and business by providing them with experienced mentors that challenge them with real-world problems and scenarios that facilitate development, grow character, and grow an appreciation for teamwork. We believe that everyone is welcome on this team. No matter their ability or interest, they will be able to find a place on the team. We are not an after-school club. We are a well-run professional organization and competitive sport, preparing the next generation of engineers, entrepreneurs, and leaders. We choose to be a self-funded team so we aren't a strain on the school district's financial resources. Additionally, we collect no dues from team members because, as a Title 1 School, we do not want financial constraints limiting participation. We are committed to promoting and supporting STEM education at all levels both in our school district and in our community as a whole. We participate in community service and outreach to show our team spirit, introduce others to FIRST, and give back to the community that supports us. We will grow, mentor, and sustain a family of FIRST teams at all levels throughout Bucks County. We expect all members to make the environment safe and welcoming at all times, and that individuals keep a constant spirit of Gracious Professionalism.

# About

At Team 5401, we strive to bring new opportunities for students to come together and learn engineering and STEM skills to help them achieve their future goals. Our team ensures that all members leave with not only stronger resumes, but also with an abundance of skills to help them contribute to our constantly innovating society, from leadership, communication, team building, and project management. By being a part of this amazing family, students will grow socially and academically, and they will be able to leave with new mentors, friends, and skills for life. We at Team 5401 will make sure the members leave with a newfound motivation and appreciation toward continuing their educational and professional goals beyond high school.

# Team History

2014-2015: Team 5401 was founded

2016: Made it to the FRC World Championship in St. Louis

2017: Won the Engineering Inspiration Award at the Hatboro Horsham district event. One of the youngest teams in FMA to win it.

2017: Made it to the FRC World Championship in St. Louis

2017: Began our Guardianship Initiative with Team 6808

2019: Won the Tesla Subdivision of the FRC World Championship in Detroit

2019: Started hosting the Bensalem District Event

2019: Started our STEM Ambassador program

2022: Won the Engineering Inspiration Award at the Bensalem District Event

# What We Do

Team 5401 focuses on one robotics competition, the FIRST Robotics Competition (FRC). Over 3,500 teams from all across the world come together to compete in different challenges that require teams to design, build, and program robots to compete.

From the end of April through December, the team is in a period of what is known as Off-Season, a time spent training its members with skills needed for the fast-paced Build-Season. During this time, we also participate in our STEM Ambassador program, where we send members to neighboring elementary and middle schools to mentor local FIRST Lego League (FLL) and FIRST Tech Challenge (FTC) teams. Lastly, we introduce members to the competition process during this time by participating in Off-Season events, with the prior year's robot.

The game for each year is revealed during Kickoff in January, and from there on out follows an intense 12-13 week process of designing, manufacturing, assembling, programming, and drive testing an advanced competitive robot through the use of CAD software, advanced metalworking machinery, robust assembly, and complex programming. Once the game of the year has been revealed, members collaborate and work on a single robot design that will compete later on in March. During this time, technical students will work in different subteams of their choice, choosing either to be responsible for designing, fabricating parts, assembling, or programming the robot. Our

team gets the opportunity to work with different mentors and volunteers that help supervise the design, building, and programming of a competitive robot.

## Non-technical Subteams

Our non-technical subteams deal specifically with the inner workings of our team, from branding and graphic arts to fundraising and outreach, to scouting and social media. Members of our team can choose to join these subteams instead of technical subteams if their interest falls into these categories. Our non-technical teams are headed by the Chief Marketing and Operations Officer (CMOO).

## Gracious Professionalism

Gracious Professionalism is a core value in FIRST that all teams practice. All members are expected to practice Gracious Professionalism and understand its definition. Practicing Gracious Professionalism means that one respects individuals and the community, values others and their voices, and they produce high-quality work. If one truly embodies the spirit of FIRST, they participate fiercely in competition and mutually gain. They are hard-working, passionate, and compete fiercely while at the same time treating everyone with respect and kindness, regardless of where they are from. No one should ever be considered a loser in this program. Following and promoting Gracious Professionalism creates a perfect blend of knowledge, competition, and empathy for others.

## Team Culture

Team 5401 is committed to providing a safe and inclusive environment for all members. The Team does not tolerate any form of harassment, bullying, or racism. Harassment is defined as any unwelcome conduct that creates a hostile or intimidating environment. This includes but is not limited to, verbal abuse, physical threats or intimidation, unwanted sexual advances, and discriminatory or offensive jokes or comments. Bullying is defined as repeated aggressive behavior that is intended to harm or intimidate another person. This includes but is not limited to, name-calling, teasing, spreading rumors, and physical or verbal threats. Racism is defined as any form of discrimination or prejudice based on race, ethnicity, or national origin. This includes but is

not limited to, verbal abuse, physical threats or intimidation, and discriminatory or offensive jokes or comments. If you are the victim of harassment, bullying, or racism, you should immediately report it to a mentor. The team will take all reports seriously and investigate them promptly. Any Team member who engages in harassment, bullying, or racism will be subject to disciplinary action, up to and including expulsion from the team. The team is committed to creating a safe and inclusive environment for all members. If you have any questions or concerns, please do not hesitate to contact a mentor.

# Joining the Team

Membership on this team is not limited to members of Bensalem High School, as long as they are high-school students residing in Bensalem (or from an invited neighboring district) OR are in 8th grade and show exceptional interest in FRC. Students can join the team at any point in time throughout the off-season, and the best time to join would be in September during the New Members Meeting where they may join as long as they complete the following:
1. The Code of Conduct and the Consent and Release form are filled out
2. You register in STIMS and on Slack

Returning members must also fill out and complete the same forms again for another year, regardless of their prior participation.

## Eligibility & Expectations

Of course, joining the team is only the first step of being part of the team, as a part of this family you have obligations that must be met unless you give a reasonable excuse to not fulfill said obligations. These excuses must be made known to a mentor or your student leaders in a reasonable amount of time. All of the following are acceptable excuses for missing certain obligations. They must be communicated before the meeting in the attendance channel of Slack:
- Illnesses/Medical emergencies
- Vacations
- Conflicting clubs
- Work
- Religious practices

- Funerals
- Anything as discussed with mentors

The way we ensure all of the team members are contributing equally is with two different merit checklists, one for the Off-Season, and one for the Build-Season, and failing to meet the expectations listed will result in suspension from the team regardless of your status on the team.

## General Expectations

- Monitor Slack consistently and email regularly
- Communicate with mentors, leads, and teammates about absences, illnesses, needing a ride, etc.
- Know what meetings you need to attend (during Build Season)
- Manage and communicate your involvement with the team
- Maintain a high level of personal hygiene
- Complete work requirements
- Always show Gracious Professionalism
- There is no tolerance for bullying, harassment, or physical violence
- Remember to stay safe and listen to the Chief Safety Engineer
- Having fun is required

## Offseason Work Expectations

- Must participate in the STEM Ambassador programs
    - 15 hours of attendance at the student's respective school and mandatory attendance at their competition
    - Attendance will be taken by the teacher in charge of that school/team
    - Be a great role model to students, be the reason they look forward to STEM
    - If you cannot support the STEM Ambassador Program, you must discuss with the Outreach Coordinator and at least one mentor to be approved for an exemption.
- Attendance:
    - New Members: 60% total attendance, starting after they join
    - Returning Members: 60% total attendance from the beginning of the off-season, including the summer camp

- ○ Show up to assist at summer camp wherever they can both behind the scenes and on the scenes with the younger students
- Participation in at least two fundraising/volunteering events for the team
- Subteam leads must provide accurate information that new members have been putting in the effort for the sake of themselves and the team, contributing to the freshmen's robot or to off-season objectives.
  - ○ These reports done by the subteam leads shall be administered monthly during the off-season via a short Google form sent out to the leads.
- New Members: Passing their respective subteam competency test
  - ○ Subteam leaders are free to design an exam that assesses a student's ability to contribute to that subteam. The test doesn't need to be an actual exam and subteam leads have full freedom to create any form of test as long as it reasonably determines competency. It must be given during December to confirm that a student can safely and competently be a part of the team
  - ○ If a member does not pass the exam, they will be given second chances until they succeed. However, their participation in the work on the robot will be limited until proven skilled and competent
  - ○ Returning Members are not required to retake subteam exams if proven to be skilled and competent
- While in the lab, students should be entirely focused on the task at hand, or actively seeking out more work. Students repeatedly spending time on their phones, playing video games, or who are otherwise distracted may have their attendance invalidated by a mentor. Repeated invalidated attendances and you will be temporarily suspended or dismissed from the team.

# Build Work Season Expectations

- Attend both days of Kickoff
  - Any excuses must be provided directly by a parent/guardian to a lead mentor as soon as possible
- Active participation in their respective subteams that was recorded and reported by leads
  - Examples include building a certain amount of parts for the robot per their experience and skill level to be determined by subteam leads
  - Subteam leads will deliver this data weekly during the Build-Season
  - Participation reports done by the subteam leads shall be administered weekly during Build-Season.
- 100% total Wednesday attendance, unless excused by contacting a mentor
- 70% total attendance for all other days specified by mentors or subteam leads

# Competitions

Additionally on top of these expectations during standard meetings and throughout the seasons of FRC, we expect all members to make the environment safe and welcoming at all times, and that individuals keep a constant spirit of Gracious Professionalism. These expectations are most prevalent during competitions, the members of Team 5401 represent the team, and they must set a strong leading example for other teams to follow. Other competition expectations include:

- Attendance is required for both district competitions
  - Bensalem Competition
  - The other is hosted at another school
- Perform proper Gracious Professionalism etiquette
- Required to be in stands for our matches, any scheduled scouting shifts, and awards
  - The only exceptions are if the member is needed somewhere else, Impact Award, for example
- Know the relative times for pit shifts, scouting shifts, and when our team matches are up so you can cheer loud and proud for us
- Wear safety glasses in pits and avoid going into our pit unless it is your schedule or you were called upon to show up

# Travel and Competition Requirements

If we rank high enough from the two competitions, we will have the ability to move on to Lehigh and/or World Championships

- The top sixty teams, in the Mid-Atlantic District, qualify for Lehigh and the top twenty teams qualify for Worlds
- Remember to follow all of the previously stated competition requirements
- Since these competitions require a hotel, there will be a limited number of spots available for team members to go
  - Basic requirements include attendance to all competition days and kickoff and 75% meeting attendance
  - Travel team qualifications are based strictly on merit and not seniority

**Not following the expectations and requirements outlined in any of the above categories, or failing without proper excusal from your subteam lead, PM, and or Mentor can result in a temporary suspension from robotics activities or removal from the team. Suspension means you will still be on the team roster but will be unable to participate in any team activities such as competitions. Removal means you are no longer eligible to be a member of Team 5401 and lose all privileges of being a member (inclusion on a resume or free reign over robotics facilities).**

# Team Dues

Team 5401 charges zero dues for students to join the team. Our only required cost is that students pay for their trip to the FIRST Mid-Atlantic District Championship in April if the team is to make it and the student is eligible. In our most recent season (2023), the cost of that trip was $180 and included a buffet breakfast and dinner during the entire stay. If the team qualifies for the FIRST World Championships in Houston, the students will be required to pay for that as well. Currently, there is no estimate for how much that trip would cost.

# Meetings

During the Off-Season (April-December), the team will be meeting every Wednesday from 3 PM-8 PM at Bensalem High School's Engineering Lab, anytime before that is free time, though it is strongly recommended this time is used to complete homework assignments. During the Build Season (January-April), the team meets from 4 PM-9 PM every Monday, Wednesday, and Friday, and from 9 AM to 4:30 PM on Saturdays. It's important to note that these times are not set in stone, and can/will be subject to change if the school becomes inaccessible for the team or different times are needed. Each subteam has a different time commitment during Build Season, and should check in with the subteam leads to figure out what days they are specifically needed. Before competitions, expect certain subteams to have full week attendance to aid in last-minute preparations for the robot.

The team holds regular announcements at least once a week, most likely every Wednesday. These announcements are mandatory. During build season, they are usually held at 4:00 PM, after homework time for all of the members. However, during the off-season, they are pushed an hour earlier, to 3:00 PM.

# Mandatory Events

It is okay if a student cannot attend every weekly meeting, but we have a few specific events that we require ALL students to attend unless their parent or guardian contacts our head mentor. These events are:

- Kickoff weekend at the beginning of January
- Our first competition
- Preparation for our self-hosted Bensalem Event (Thursday and Friday before)
- Bensalem Event (our second competition)
- Town Hall

These events are also subject to change as scheduling challenges arise.

# Town Hall

The town hall meeting is a mandatory, end-of-the-year meeting where students choose the next year's student leaders, discuss the team's issues, and brainstorm solutions and initiatives to take in the upcoming year. The primary purpose of these meetings is to get feedback, whether positive or negative, from members. However, the benefits extend beyond mere feedback. Having a town hall allows for diverse opinions, authentic communication, mutual understanding, and transparency between student leadership and the team at large. The specific schedule of the meeting is free to be decided by the team, but the PM is responsible for recording proposals and ideas from the team to be presented to the mentors.

# Communication

- Website: https://team5401.org
- Instagram: @team5401
- X: @team5401
- Facebook: @team5401
- Slack can be accessed through the mobile app, or on the desktop at https://team5401.slack.com
- The Team Calendar can be accessed by simply typing "calendar" in any Slack channel.

Students are expected to regularly check both Slack and the Team Calendar, and failing to do so is not an excuse to miss anything.

# Outreach

Team 5401 hosts numerous outreach events during the year that are mandatory for students to attend. As a student of Team 5401, you must help volunteer as a Stem Ambassador, in our Stem Ambassador Program. Our Stem Ambassador Program is a group of students who travel to elementary and middle schools in our district to help the FIRST Lego League and FIRST tech challenge teams we have started. We have a total of 9 FLL teams and 3 FTC teams which usually start in September.

The Process to Sign-Up for FLL and FTC Volunteering:

1. Get your PA Child Protection clearances and PA Police background check
2. The Outreach Coordinator will identify and select STEM Ambassador team leaders
3. The Outreach Coordinator will produce a signup sheet, either sign up for an available spot or talk to the Outreach Coordinator to get yourself signed-up
   a. While working as a STEM ambassador, the teacher at the school you will be working at will be given weekly attendance sheets they will fill out to be submitted
   b. It's expected that while you are there, you are documenting your students' progress with pictures and writing.

# Confidentiality

Helping others is a crucial part of FIRST, and as a team, we are glad to help any team that may need it through the sharing of ideas or resources. However, members are not permitted to disclose any ideas, designs, documents, photos, or videos to anyone not affiliated with Team 5401 without the explicit approval of the leadership team. Confidentiality is taken very seriously and disciplinary action will be taken such as removal from the team when a member fails to maintain the team's trust.

# Facilities

## Sharing Our Spaces

All of the spaces that our team uses during our meetings are also used by teachers and classes during the school day. None of their stuff may be tampered with by our team. Disciplinary actions will be taken if a teacher and/or class materials, projects, or workspaces, are tampered with negatively by members of our team.

## CADD Lab

This is where the process of making a robot begins. After a design is thought up, the CAD members create a digital mockup of the robot and all of its parts, which then can be printed out and given to the manufacturing team to bring it into reality. This is also the location of all of the announcement meetings throughout both the build season and the offseason. However, there is no food or drink allowed in the room unless it is sealed, because of the expensive equipment that could get damaged.

# Manufacturing Shop

This is where the magic happens to create the actual pieces for the robot from raw materials. Our skilled, and careful, members use different machinery such as the milling machine, two lathes, a chop saw, a CNC, and a few others to produce all of the parts for the robot. Remember to follow the safety rules, including:

- Long hair should be tied back
- Any hanging strings or chains should be tucked away
- Do not wear dangly Jewelry in the shop
- Always wear safety glasses and closed-toed shoes
- The shoes worn must be tied off
- NO horseplay in the shop
- Refrain from wearing baggy clothing or gloves
- Follow the listed machine protocols in the Shop Manual
- Always try to work with supervision in the event an accident occurs
- Don't attempt risky procedures on the machinery
- Press the E-Stop only if its a genuine, life-threatening emergency

# Bensalem High School Robotics Lab

The Lab is our team's main space for robotics work, homework, and sitting around before meetings and during breaks. One-half of the lab is explicitly reserved for our robotics work. Our programming subteam, assembly, pit, and practice field are in the back half of the lab. In the pit and on the practice field, it is necessary to follow all safety precautions since robots and tools are regularly being used. Our programming team codes the robot and the controls so it can run. Our assembly team works in the Pit and on the field to assemble bits and parts into a functioning robot.

# Business Room (Graphic Arts Classroom)

Our non-technical subteams operate in the Graphic Arts Room, found in room J122. Food and drink are allowed to be consumed in the room, but no trash should be left behind on the desks or in the trash cans in the room. As non-technical subteams are doing work, it's important to not hang out in the room without doing work.

# Student Leadership Team (SLT)

Team 5401's goal is to be as student-driven as possible. Students are chosen by their peers to be leaders and have specific responsibilities. The image on the next page displays the structure.
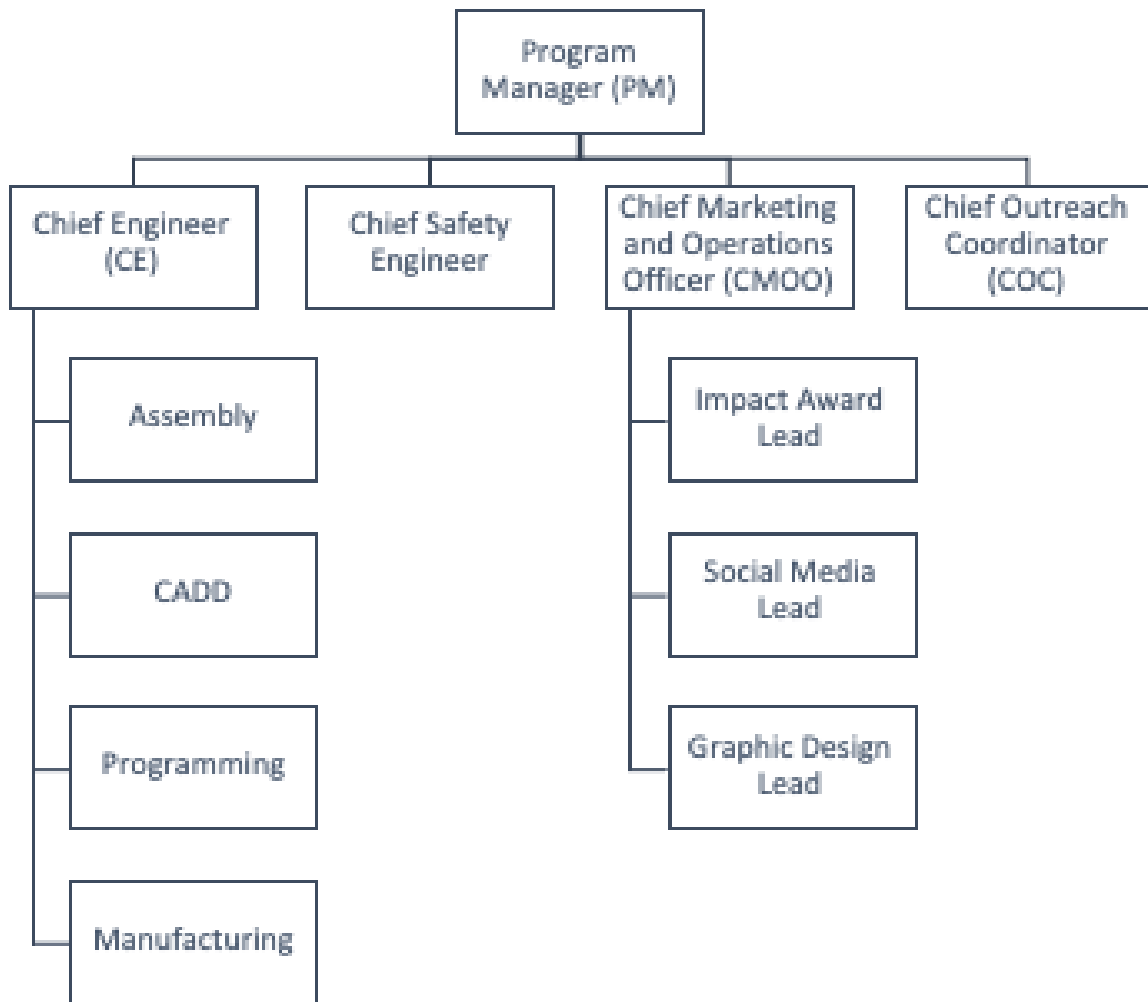
# Program Manager (PM)

The Program Manager is responsible for leading the entire program and handling the logistical, and business-related affairs of the program.  They have the highest authority out of every student leader in the program. The PM as a person needs to be friendly and welcoming, as well as being able to approach and assist in resolving team conflicts and understand the concept of the team and FIRST itself. Such responsibilities of the PM include:

- The daily affairs of the program, such as leading announcements
- Making sure all of the team members are doing well academically and mentally
- Making sure people are engaged, having fun, and getting work done
- Overseeing the creation or updating of certain documentation for different awards
- including but not limited to the Technical Summary, Business Plan, Safety Binder Woodie Flowers, Impact Award, and more
- Ensuring the success of the Outreach program with the COC
- Running other behind-the-scenes activities and affairs outside of the meetings such as fundraisers and/or party planning
- Removing members of the Student Leadership Team if the team votes for it

# Chief Engineer (CE)

The Chief Engineer's responsibility is to oversee and assist in the affairs of all four main technical subteams: CADD, Manufacturing, Assembly, and Programming. Such responsibilities of the CE include:

- Ensuring all work and assignments are getting done in a quick and timely fashion
- Coordinating the creation of the technical summary with other technical leads
- Acting as a connection between the subteams by helping to communicate important information regarding progress and robot time
- Understanding the Pit process during competition basic aspects of all technical subteams
- Electing subteam captains in whatever way they see fit

# Chief Safety Engineer (CSE)

The Chief Safety Captain has the most serious job in terms of safety for the team, as they are in charge of making sure everything that goes on in the team is safe and the rules are being enforced. Such responsibilities of the CSE include:

- Enforcing proper safety regulations in the shop, in the pit/assembly area, and other general rules
- Creating the main safety committee
- Ensuring all personnel near dangerous machinery are properly trained and understand proper first-aid
- Updating the safety binder with help from the safety committee

# Chief Marketing and Operations Officer (CMOO)

The non-technical lead is the Chief Marketing and Operations Officer (CMOO). Such responsibilities of the CMOO include:

- Leading the non-technical teams in their work toward getting sponsors and donations for the team
- Helping push different outreach initiatives such as the STEM Ambassador program
- Overseeing the team's financial status
- Producing a financial summary upon request for the sustainability award and more
- Preparing people on the team to be judge talkers and helping instruct them by teaching them relevant judge talking points before and during competitions

# Chief Outreach Coordinator (COC)

The Chief Outreach Coordinator works in tandem with the PM to organize outreach events and volunteering opportunities for team members. This includes but isn't limited to:

- Our Summer Camp
- STEM Ambassador Program
- Ensuring students receive their volunteer clearances
- Planning of events, fundraisers, etc
- helping the CMOO in running the non-technical subteam in general

# Subteam Leads (STL)

Subteam Leads run and train new members of a technical or non-technical subteam. Such responsibilities of an STL include:
- Creating proper lectures, lessons, and teaching during the Off-Season of robotics
- Ensuring all of their members are adequately contributing to the progress of the robot in Build-Season
- Delivering reports on activity to the PM every week
- Assisting the Chief Engineer in communications between the tech teams
- Responsibility for the creation of competency tests during the Off-Season to test students' abilities in their respective subteams (It doesn't need to be a formal exam, but something that can accurately prove competence as outlined previously.)
- Ensuring every member of their subteam is active
- A student refusing to work should be reported to the Chief Engineer and/or the PM

# Becoming a Student Leader

Each of the students that choose to run for a leadership position on the team must undergo a process to be considered a candidate for that position. The requirements to run for specific positions go as follows.

**Program Manager (PM) Process**
1. To indicate your interest in running for the PM of the team, you will have to submit a resume, most recent report card, and provide answers to the following questions to a google drive folder every year:
    a. What is a measurable team project you worked on and had a significant role in?
    b. If not you, who do you think is the best choice for PM and why?
    c. Why do you think you are qualified for this position?
    d. What weaknesses do we have as a team?
    e. What objectives would you have as PM and how would you achieve them?
    f. How would you deal with a student that doesn't engage and/or refuses to stay on task?
    g. Do you have external commitments to other clubs, jobs, or other activities? If yes, how would you effectively manage your involvement in other activities?

      h.   Provide 2 to 3 team references (fellow students) that know your capabilities best.

2. Once you submit your resume and answers, your fellow students will review your applications and select <u>more than one PM nominee</u> out of the students that applied via submitting their applications. The process to choose nominees (for all positions) is up to the students during Town Hall.
3. The mentors will conduct interviews with the two nominees and their references to pick the next PM with consideration of their resume, answer responses, and interviews as a whole.

### Student Leadership Team (SLT) Process

1. After the new PM is chosen by the Mentors, the process repeats for the other SLT positions of Chief Marketing and Operations Officer, Chief Engineer, Chief Outreach Coordinator & Chief Safety Engineer.
2. Once the two nominees for each SLT position are chosen, a panel consisting of mentors, the new PM, and the current SLT will pick the rest of the new SLT.
3. Subteam leadership is at the discretion of the corresponding SLT member (Example: CE determines CAD lead, assembly lead, manufacturing lead, etc.)

# Removal from Office

Failure to meet such responsibilities may result in one's student leadership privileges being revoked from them and forfeited to another member of the team. A vote of no confidence in any member of the student leadership team can be brought to the PM by at least five students. If five students want to bring a vote of no confidence on the PM, they should bring it directly to a mentor. If a supermajority of two-thirds of the team votes to remove a student from leadership, that student will forfeit their leadership position but can remain on the team.

# Changing the Handbook

This Handbook is not a set-in-stone document and can be subject to change at any point in time. Proposed amendments to the Handbook can be brought to the leadership team and mentors by any student. An amendment can be approved or rejected by the leadership team and mentors by a vote during Town Hall. Any amendment made must be posted in the Announcement Slack channel, and any publication or embedding of the handbook digitally (like on the website) must be updated immediately.

# Authority of the Handbook

The rules and policies outlined in this handbook are binding and must be followed by all team members. The leadership team has the authority to modify this handbook at any time. Team members will be notified of any modifications. All students must acknowledge the Authority of the Handbook by signing the Code of Conduct that is handed out at the beginning of the off-season.