

4472

# SUPERNOVA

INNOVATE. THINK. INSPIRE.

# What is SuperNOVA?

SuperNOVA is an All-County Team FIRST Robotics Competition Team comprised of students from PWCS high schools.

Our mission is to provide the opportunity for high school students to learn critical engineering, programming, business, and leadership skills to hone skills in the fields of science, technology, engineering and mathematics (STEM).

FIRST Robotics challenges students to build industrial-size (120 pound) robots to compete in a difficult game based challenge in alliance with other teams under strict rules and limited time and resources.



# How SuperNOVA works



SuperNOVA prides itself on being student led team. Technical mentors work alongside students to guide and teach.

Main Sub-Teams:

- Mechanical
- Programming
- Electrical
- Business

Other Sub-Teams:

Drive Team, Safety, Strategy/Scouting, Pit Crew

Students are Appointed as Sub-Team and Project Leads based on experience by the Leadership Team.



# Coaches and Mentors

## Coaches:

Karen Cinnamon – 12 years as Robotics coach (all platforms)

Carlos Castro - VEX Robotics Coach, Woodbridge HS (school liaison)

## Mentors:

Ben Murray – Mechanical

Terence Tai - Programming (Founding mentor)

Adam Ehrmantraut - Electrical

Afnan Ali – Programming/Strategy (Alumni)

Kevin Maurer - Programming

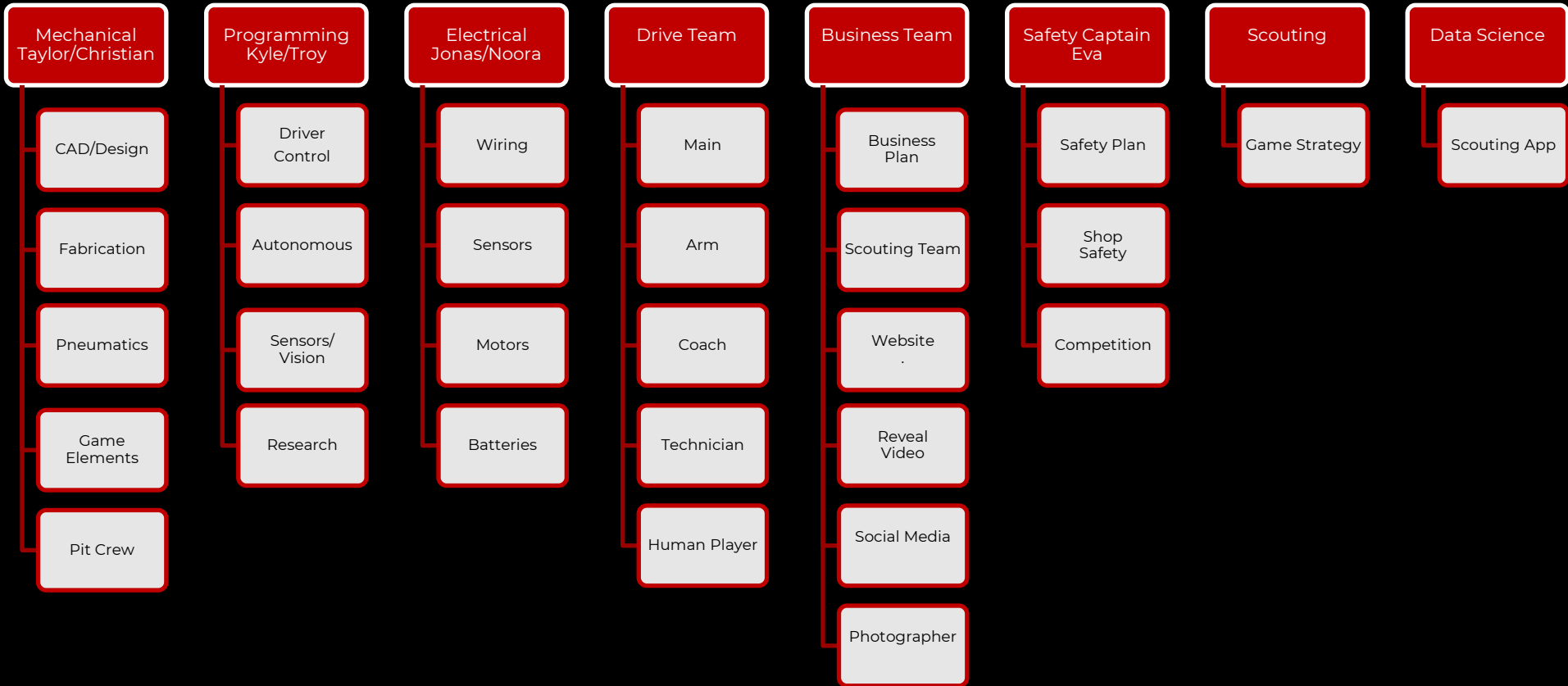
John Hinkle – Technical guru

College Alumni -

You? – We are always looking for additional mentors to help out.

Our Coaches and Mentors volunteer countless hours to guide our team.

# Team Structure

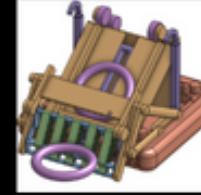


# Mechanical Team

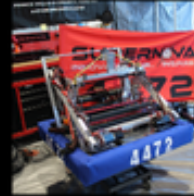
Responsibilities:

- Robot Design, including CAD Drawings
- Manufacturing Components
- Part assemblies
- Building the robot

Conceptualize



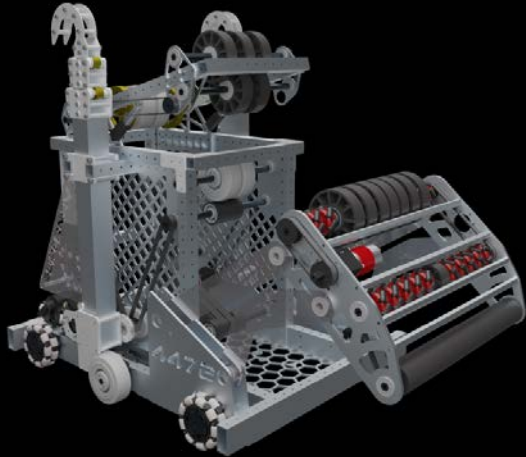
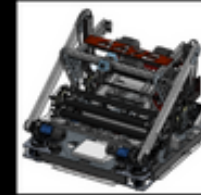
Manufacture



Prototype



Design



# Programming Team

- Develop Code in Java
- Configure the controls
- Program Driver Control
- Program Autonomous
- Integrate and use sensors for autonomous control
  - Gyros, Encoders, Vision, Navigation, Lidar, etc

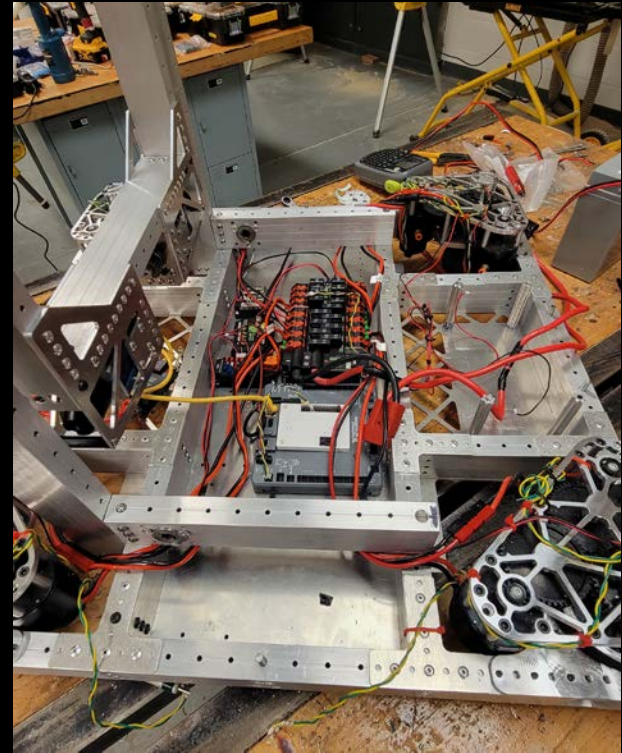


```
Robot.java SuperNOVA 2018BIOC - Visual Studio Code
EXPLORER
  OPEN EDITORS
  Java Overview
  SUPERNOVA 2018BIOC
    gradle
    settings
    vscode
    launch.json
    settings.json
    wpilib
    mpilib_preferences
    gradle
    src
      main
      java
      org
      robot
      src
    test
  gitsync
  build.gradle
  gradlew
  gradlew.bat
  OUTLINE

Java Overview
205 //startDumble = gimble.getSensorCollection().getPulseWidthPosition();
206 leftController.setOutputRange(-0.4, 0.4);
207 rightController.setOutputRange(-0.4, 0.4);
208 gyroController.setOutputRange(-0.4, 0.4);
209
210 SmartDashboard.putNumber("ArmEncoder", armEncoder.getDistance());
211 //SmartDashboard.putNumber("Dumble Encoder", gimble.getSensorCollection().getQuadraturePosition());
212
213 visionThread = new Thread () -> {
214     UsbCamera camera = CameraServer.getInstance().startAutomaticCapture(0);
215     camera.setResolution(160, 120);
216     camera.setFPS(20);
217     CvSink cvSink = CameraServer.getInstance().getVideo();
218     CvSource outputStream = CameraServer.getInstance().putVideo("Rectangle", 320, 240);
219
220     Mat mat = new Mat();
221
222     while(true) {
223         if(cvSink.grabFrame(mat)!=0) {
224             outputStream.notifyError(cvSink.getError());
225             continue;
226         }
227
228         ImgProc.rectangle(mat, new Point(100,100), new Point(400,400), new Scalar(255,255,255),5);
229         outputStream.putFrame(mat);
230     }
231 });
232 visionThread.setDaemon(true);
233 visionThread.start();
234
235 visionThread2 = new Thread () -> {
```

# Electrical Team

- Organize and build electrical panel
- Integrate and Organize components
- Setup Motor Controllers
- Crimp and organize wiring
- Battery management
- Work with Programming and Mechanical team for integration





# Business Team

- Create Business Plan
- Write FRC Awards
- Locate and Write Grant Applications
- Develop Fundraisers
- Works with Sponsors
- Manages the Team Logistics
- Develops and Manages budget
- Manage Team Website and Social Media



Booz | Allen | Hamilton

# Drive Team

- Work together as a cohesive unit.
- 2 Drivers – Main and Accessory
- Coach – Communication and Strategy  
Work with other teams, eyes and ears during match.  
Must understand game play, scoring, and strategy.
- Human Player – Game elements - focused, athletic
- Technician – Responsible for robot, fixing any issues
- Safety Captain





# Parents we need your help!

- **Food** - We have 40-50 people in the shop each weekend. We ask each family to send in individual bagged snacks(chips, granola bars, cookies, fruit snacks, etc) and drinks (water, soda, juice) to help the team get through the day
- **Mentors** - We are always in need of additional mentors.  
Currently looking for:
  - Mechanical Mentor
  - Business and Technical mentors
  - Team Mom to help with logistics
- **Build Practice Field Elements (Woodworking)**  
We need help designing and building mock field elements for the drive and programming teams.
- **Transportation.** Provide carpools to practices when the need arises.



# Schedule

November 23 – 10am-12:30pm- New Member Tryouts

December 7 First Practice 9am-1pm.

Practice schedule:

- Saturday 9am-5pm
- Sunday 1pm-5pm
- Friday 3pm-6pm – As needed
- Practices during the week as needed (usually Virtual on Discord)

Competitions:

- Week 1 Event March 1-2, 2025 Glen Allen, VA (Overnight)
- Week 4 Event March 22-23 Alexandria, VA
- District Championships Friday, April 4 to Sunday, April 6, 2025  
ShowPlace Arena, Upper Marlboro, MD

# What a Typical Practice Looks Like



The students work with their teams to complete their projects. Due to the nature of our team, students will frequently be asked to work on additional projects as the need arises.

# What to expect at a competition



# Why you should join SuperNOVA

- The Hardest Fun you will ever have! It is a Sport for the Mind!
- Unique Experience - Learn something new everyday from each other and mentors
- Hands on Shop Experience - CNC, Power Tools
- Learn to troubleshoot and fix anything - We are fearless problem solvers!
- Designing and building 120 pound robot with your friends is awesome!
- Colleges and Potential Employers love to see FRC experience on resume!
- FRC is widely recognized in industry for the technical aspects as well as communication, collaboration and teamwork skills it provides.
- Similar to managing a small company \$25000 budget

!



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# Expectations

Attendance: Students need to be at 75% of practices in order to attend competitions and travel with the team. Leadership Team and Team Leads have even higher expectations.

If you want to have a significant role on the team, you must be committed and dependable.

- We understand conflicts. Most of the students also compete in VEX so we will work around that competition schedule. We also have many involved in sports and work with student schedules.

Fundraisers: Participate in all fundraising activities: Spirit Nights, Tag Day

Food: Sign up to bring in snacks/drinks for the team during build season.

Transportation - Students/Families are responsible for transportation to and from practices.

Team Bus transportation to/from competitions.

## **Expenses:**

Activity Fee \$100 for all members

Team Apparel ~\$80 includes 2 polo shirts and team t-shirt

Additional spirit wear available for purchase (Jackets, Hoodies)

Travel fees: Students are expected to pay their share of all travel expenses. Bus, Hotel, Food, etc.

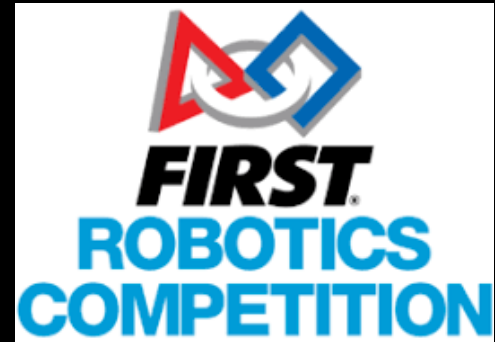


# Interested in Joining SuperNOVA?

SuperNOVA is an All-Star team. We bring together the best of PWCS who are ready for the next level of engineering, programming, and robotics competition.

Due to the nature of this team and work environment, we look for students who have a high level of maturity, solid work ethic, willingness to learn, focus, and an ability to work well with others.

## Any Questions?



# Next Steps

- Apply for the team:  
<https://forms.office.com/r/J6ra1HHdtR>  
Due Friday, Nov 22 at 5pm
- Attend Tryouts on Saturday Nov 23<sup>rd</sup> from 10am-12:30pm
- Team Communication  
Google Groups for Email Announcements  
Discord: Team Communication
- December 7<sup>th</sup>: 9am-1pm: First Practice
- January 4<sup>th</sup>: 11am-5pm : Kickoff – Season Begins
- January 19: Activity and Apparel Fees due (Information will be sent in January)
- Sign FIRST consent forms (directions will be sent in January) and Student Contract
- Complete Safety Training at Practice

SuperNOVA Robotics Team  
Application



