2024
CRESCENDO℠ presented by Haas

This notebook belongs to: _____

Unlock Code: _____

My Team Roles

(Build)_____

(Competition)_____

Team Joining Checklist

- ☐ Team Packet Completed and Returned
- ☐ Registered with FIRST at FirstInspires.org
- ☐ Signed up for Team Discord
- ☐ Created Github Account and Added to Team Github

Welcome to Team Ronin
FRC Team 4919

This introduces you to how Team Ronin builds a competition robot. During the build season, Team Ronin organizes into mechanical, control, and software build teams. There are also drive, scouting, pit, presentation, and business teams. You may be a member of more than one of these teams and you may work on projects that may be typically associated with another build team.

FIRST has an excellent technical resources at http://docs.wpilib.org. **All** team members should bookmark this page. It is FIRST's manual on how to design, build, wire, program, and drive the robot. You will find out about the software, controllers, motors, and sensors we use to make the robot effectively compete. This document though, is specific to Team Ronin.

The GitHub Repository

When getting started with Team Ronin getting a GitHub account is important to contribute to the team. We use GitHub to document the design, build and code of the robot each year. Sign up at https://github.com/signup, you will need to enter your e-mail address, create a username, and create a password.

The Team Ronin Cycle

Pre Season	**Post Season**
• Training • New Github Repository • Sign up	• Reflect - Lessons Learned • Fund Raise • Continue to Pre Season
Season • Kickoff • Build Robot • Submit for Awards • Compete	

Build Season Teams

Build Safety

Safety is important to Team Ronin. The Pre Season starts with training on using our tools safely to build a robot.

- http://www.firstinspires.org/resource-library/frc/safety-manual
- Machine Shop Safety: https://www.ehs.harvard.edu/programs/machine-shop-safety

The Mechanical Team

Create scale robot drawings, game element drawings. Build the drive base, assemble the drivetrain and game elements. Team Ronin's robot building resources though the years; important stuff is here: https://github.com/FrcTeam4919/Resources/wiki

The Software Team

Develop the robot code and mange the repository (https://github.com/FrcTeam4919). Starts the season installing the new development environment: https://docs.wpilib.org/en/stable/docs/zero-to-robot/step-2/

The Controls Team

Assembles and wires the roboRIO, motors, sensors, and other electrical and pneumatic components per the guide: https://docs.wpilib.org/en/stable/docs/zero-to-robot/step-1/how-to-wire-a-robot.html.

Competition Teams

The Drive Team

Responsible for team performance for a specific MATCH at an FRC competition.

Pit Team

Keeps the robot in top operating condition at competition.

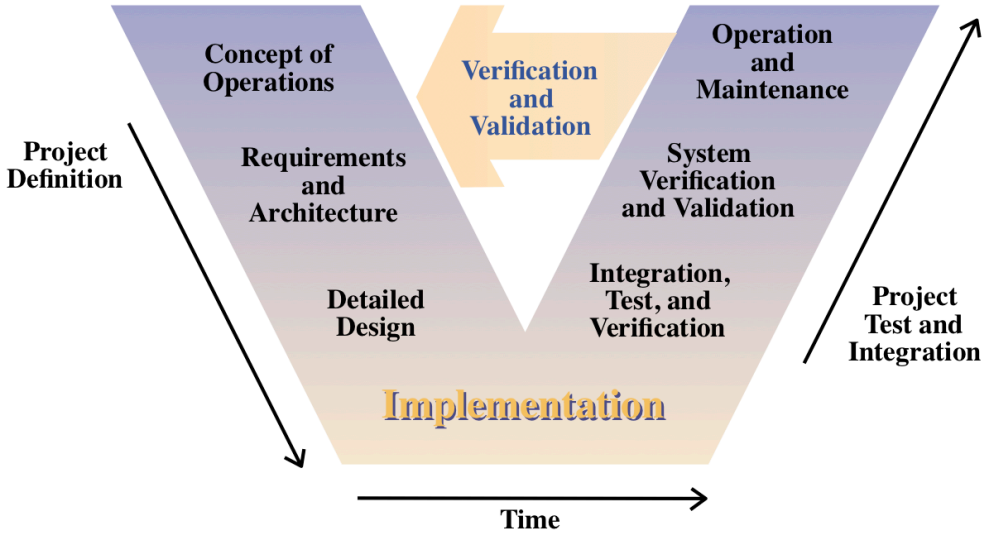
The Scouting Team

Track other teams' strengths and weaknesses for choosing complementary alliance partners in the final rounds.

Presentation Team

Represents Team Ronin at at the competitionRobot Engineering

Team Ronin Robot Design Process



➡ Define Requirements
- ✓ Game Decomposition - scoring points, ranking points, and how Team Ronin want to play the game; mock up playing field.
- ✓ Capture robot size: frame perimeter (width, depth), height, and weight
- ✓ Use Cases (Verbs: What will the Robot, Human Players, and Operators do? autonomous and teleop)
- ✓ Prioritize Use Cases by difficulty to do during game, complexity to implement, points and ranking points earned

➡ Alternative Designs
- ✓ Include drivetrain type and game elements in rough front, top, and side views
- ✓ Consider First, Second, Third, ... Alternative Designs

➡ Final Design
- ✓ Description of Design (Drivetrain, Game Elements, Motors, Pneumatics, Operator Interface)
- ✓ Scale Drawings: Front, Top, and Side Views
- ✓ Sensors and Control Signals Map
- ✓ Schedule/Rough BOM/Estimated Weight

➡ Build Implementation
- ✓ Scale drawings of drivetrain and each Game element
- ✓ Prototype drivetrain and game elements
- ✓ Updated materials to BOM

➡ Control System Implementation
- ✓ Power, signal, and pneumatic Schematics
- ✓ Physical layout drawing
- ✓ Updated materials to BOM

➡ Software Implementation
- ✓ Create Repository: Robot_YEAR e.g. Robot_2020
- ✓ Update software: Development computers, driver stations, control components: RoboRio, Radio, PCM, etc.
- ✓ Define subsystems and commands for RobotBuilder from Sensors and Control Signals Map