Achievements

As much as we can, we will try to keep achievements separate from the subgroups. Ie. you do not have to be on the chassis team to collect advancements. The leadership can modify and add achievements as needed.

-Mechanical-

- L1-Measurement
  - Measuring
    - Ruler use
      - Metric vs “standard”
      - Proper measurement device for a task
      - Marking for a cut or drill
    - Sketching
      - Hand sketching and markup
- L2-Basic Tool use
  - Power tools Identification / safety / use
    - Bandsaw
    - Chop saw
    - Drill press
    - Hand drill
    - Lathe
    - Mill
    - CNC Router
- L3- Chassis
  - Wheels
    - Specialty
      - Mecanim
      - Omni
    - Grip
      - Compliant
      - Waffle
      - Pneumatic
    - Slick
      - Wheelchair
      - Lunacy wheels
  - Chassis styles

        - 6 wheel drop center
        - Forklift
        - Crab / swerve
        - Mechanism
        - Butterfly
        - Holonomic
        - H-Drive
    - Connector styles
        - L
        - I
        - T
        - Y
        - C
        - U
        - Adjustable
        - Caps
    - Hardware (nuts & bolts)
    - Gearboxes / ratios
    - Sprockets / chain
    - Belts / pulley
    - Levers
    - Counterweight options
    - Linear glides
- L4-Specialty tools
    - CNC Mill
    - CNC Router
    - Lathe
- Trainer

-Electrical-

- L1- Identification
    - Component names
        - Acronyms
    - Wire color
        - Red
        - Black

- L2- Construction
    - Component purpose / Specifications
        - Battery
        - SB-50
        - Main Breaker
        - PDB
            - Channels
                - <40
                - >40
            - Breakers
            - Wago Connectors/Tool
    - CAN Bus
    - RIO
        - Purpose of each Connection / Port
        - RSL
    - VRM
    - PCM
    - POE Injector
    - Wire size
    - Connectors
    - Soldering
    - Crimping
    - Wiring Diagram

- L3-Troubleshooting
    - 2890 troubleshooting procedure
    - Diagnostic Lights

- L4-Trainer

-Pneumatics-

L1- Identification

- Component Names
    - Compressor
    - Acumumlator

        - Air Pressure Switch
        - Safety Relief valve
        - Gauge
        - Regulator
        - Pressure venting valve
        - Flow Control
        - Solenoid
        - Cylinder
        - Tubing
        - Press fit connector

L2- Construction

- Components
    - Purpose
    - Connections
- Parts of a solenoid
    - Wire
    - Coil
    - Body
- Types of Pistons
    - Bore
    - Stroke
    - Action
- System design

L3-Troubleshooting

- Calculating volume
- Calculating power transferred
- 2890 Troubleshooting procedure
- Diagnostic Lights

L4-Trainer

-Programming -

API
Libraries
Hardware integration
Documentation (in-line, javadocs, git README)
Autonomous

Pit Quality of Life applications (Scouting, ETA for next match, Logging functionality)
Issue/ToDo Management

Level 1 -

- Drive station
    - Start up / login
    - Establish Comms with the robot
        - Tether
        - Wifi
    - Controllers
        - Connecting
            - Checking buttons actions in dashboard
    - Enable/Disable
        - Autonomous
        - Teleoperated
- SliverLight
    - Set CAN numbers
    - Check CAN signals
    - Update TallonSRX Firmware
- RIO
    - Ports
    - Re-flash firmware
- Drive time - Drive the robot for 30 min.
- Radio
    - Provision
    - Connections

Level 2 -

- Code
    - Given funcional code
        - Change values
            - Speed
            - Direction
            - Add motor controller
                - Add function to xbox controller

Level 3 - Start from zero and build your a fully functional code to perform a predefined set of tasks. Include Git

Level 4 - Troubleshooting

-Strategy-

Level 1 -

- Level 1 -
  - Active participation in first 3 sessions (start to finish).
  - Hand draw sketches
  - Present / explain your Robot (sketches)
  - Watch endgame of worlds
  - Analyze how your design will fit into the alliances.
    - Defend your results
- Level 2 -
  - Active participation in 4 sessions (start to finish).
  - CAD drawn robot
    - Using the “team parts” in the cad program
  - Present / explain your Robot designs
  - Watch endgame of “Worlds”
  - Analyze how your design will fit into the alliances.
    - Defend your results

- Level 3 - Active participation in 5 sessions (start to finish).
  - Animated CAD Drawings.
  - Present / explain your Robot designs
  - Watch endgame of “Worlds”
  - Analyze how your design will fit into the alliances.
    - Defend your results
    -
- Trainer - Plan and lead 3 additional sessions.

Overview of a complete ”Strategy Session” :
Given a year assigned by Trainer or mentor :(2003-Present)
- Watch the kickoff video
- Read the manual for the game.
- Group conversations prioritizing a scoring strategy
- Pick the best drivetrain for the event
- Brainstorm an ideal manipulator for the evet

- Sketch it out (hand drawn / CAD)
- Write up as many details as possible : (approximate)
    - Height
    - Weight
    - Feet Per Second / motion

-Watch the last half hour of finals for that event. Score how close your bot comes to the playoff teams. Try to see how your design would fit into the playoff events.

Trainer/mentor will : Read the game manual and be able to reference any rule violations the trainee might overlook. Watch the finalist matches ahead of time.

https://www.firstinspires.org/resource-library/frc/archived-game-documentation

-Business-

Finances
Budget
Sponsors

-Outreach-

Networking
Sponsor relations
Starting other teams
Team promotional material