

Electrical

Everything you need to know to be either L1 or L2 in the Electrical Subteam on FRC 3506

- [L1 Electrical Panel Builder](#)
- [L2 Electrical Engineer](#)

L1 Electrical Panel Builder

Responsibilities:

- Builds the electrical panel based on Electrical Schematics and Layout drawings
- Installs the electrical panel on the robot
- Installs and wires all sensors
- Installs Pneumatic components such as valves, air preparation/storage, and plumbing based on Pneumatic Schematics and Layout drawings
- Creates “red-line” drawings and keeps them updated throughout the life of the robot
- Maintains the Electrical and Pneumatic systems of all robots in the fleet

Requirements:

- Must meet fundraising, outreach, and attendance requirements
- Basic use of hand tools
- Test & Measurement tools
- Know basic DC Circuits
- Wiring and assembly techniques/best practice
- Intro to Electrical & Pneumatic Schematics
- CAD Electrical Schematic knowledge is preferable

Comfortable with the following (able to be tested and pass with satisfaction):

- Crimping
- Questions/Component Identification:
- Basic Wire Management
- Basic Schematic Usage

L2 Electrical Engineer

Responsibilities:

- Mentor (L1) Electrical/Panel Builders
- Oversee electrical and pneumatic work in the shop
- Works with the other Managers to select electrical and pneumatic components
- Designs Electrical Schematics and Panel Layout based on team Standards & Best Practices
- Designs Pneumatic Schematics and Panel Layout based on team Standards & Best Practices
- Responsible for updating the Engineering Workbook and maintaining project documentation
- Takes guidance from mentors and maintains Standards & Best Practice documentation

Requirements:

- Must meet fundraising, outreach, and attendance requirements
- Knowledge bank to pursue:
 - DC Circuits
 - Communication Networks
 - Discrete and Analog control circuits
 - Circuit Layouts
 - General Sensor knowledge
 - Drive Systems
 - Encoders
 - Closed Loop vs. Open Loop control
- Must be CAD capable in OnShape or SolidWorks to design sensor, camera, and electronic mounts

Must be confident (and able to pass, if tested, with satisfaction) in the following:

- Crimping
- Questions/Component Identification:
- Advanced Wire Management
- Rule Questions
- L1 CAD Certified
- Electrical Schematics

Confident L2's can wire a subsystem on their own with appropriate wire lengths, documentation, schematics, and necessary components/parts WITHOUT crimp failures.