Robot Drone League (RDL) × New Jersey State Standards

Alignment & Crosswalk Guide for Educators and Program Leads

(For use in grades 9–12 Technology Education, Engineering, and Computer Science programs)

■ Overview

The Robot Drone League (RDL) immerses students and educators in robotics, drones, electronics, CAD, coding, cybersecurity, and engineering through a hands-on, challenge-based curriculum. This alignment guide maps the New Jersey Student Learning Standards (NJSLS) in Career Readiness, Life Literacies and Key Skills, the NJSLS Computer Science and Design Thinking Standards, NGSS Engineering Design Performance Expectations (HS-ETS1), and 9.3 CTE STEM Career Cluster benchmarks to the activities and deliverables outlined in the RDL manual.

This guide helps New Jersey educators, CTE program leads, and STEM teams ensure that student learning experiences meet high-value state standards while preparing students for 21st-century career pathways.

■ Standards Crosswalk

■■ Safety & Health

Standards Referenced: NGSS HS-ETS1-3; NJSLS-CTE 9.3.ST.3; NJSLS-CLKS Responsible Community Member
Skills: Tool safety, PPE use, hazard mitigation, ESD safety, inclusive design
RDL Manual Sections: Safety Overview; Lab Safety Rules; Safety in Drone/Robot Build; Technical Documentation
Evidence: Safety checklists, labeled components, workspace setup diagrams, reflection in engineering notebooks

■ Electronics & Circuitry

Standards Referenced: NJSLS-CS&DT; 8.2.12.ETW; 9.3.ST.2; HS-ETS1-1
Skills: Circuit design, embedded systems, wiring diagrams, soldering, system troubleshooting
RDL Manual Sections: ECP Layout; Arduino Installation; PS/2 Controller; Diagnostics Mode
Evidence: Completed ECP diagrams, continuity test logs, Arduino code uploads, wiring documentation

■ Robotics & Mechanical Systems

Standards Referenced: HS-ETS1-1; NJSLS-CS&DT; Design & Iteration; 9.3.ST-ET.1
Skills: Chassis design, drivetrain mechanics, manipulator builds, autonomous/teleop control
RDL Manual Sections: goBILDA Assembly; Claw/Manipulator Build; Starter Chassis; Robot Safety Inspection
Evidence: CAD exports, build logs, motor mapping tables, scrimmage test results

■ Advanced Manufacturing

Standards Referenced: NJSLS-CTE 9.3.ST.1; NJSLS-CLKS Technology Literacy
Skills: CAD modeling, 3D printing, CNC prep, quality control, tolerance measurement
RDL Manual Sections: CAD & OnShape Design Lab; ECP Panel Laser Cutting; Drone Body Panel Assembly
Evidence: OnShape files, G-code logs, tolerance measurement sheets, laser-cut panel exports

■ Computer Science Integration

Standards Referenced: NJSLS-CS&DT; Algorithms & Programming; 9.3.ST-ET.4; NJSLS-CLKS Critical Thinking
Skills: Algorithm design, collaborative programming, data visualization, model simulation
RDL Manual Sections: Arduino Programming; Drive Program Tracing; Drone FTW Code Challenges
Evidence: Arduino sketches with comments, pseudocode diagrams, debug logs, team documentation

■ Cybersecurity & Digital Fluency

Standards Referenced: NJSLS-CS&DT; Cybersecurity; NJSLS-CLKS Use Technology Responsibly; 9.3.ST-ET.6
Skills: Cyber hygiene, secure coding, network protocols, encryption trade-offs, inclusive computing
RDL Manual Sections: Secure FTW App Setup; Arduino Controller Interface; Drone Code Storage; File Sharing Best Practices
Evidence: Authentication protocols, network configuration screenshots, secure file sharing logs, reflection sheets

■ Credential Pathways Supported

OSHA-10 General Industry
FAA Part 107 (UAS knowledge prep)
NC3 – Precision Measurement
ETA – Basic Systems Technician
NJSLS-CTE STEM Career Cluster Certifications

■ Evidence Checklist

Engineering Notebook & Google Docs
CAD exports & design logs
Wiring schematics & ECP panel diagrams
Arduino/FTW source code with documentation
Drone flight logs & inspection sheets
Cybersecurity & digital collaboration plans