Robot Drone League (RDL) × Connecticut STEM Standards (ITEEA STEL, Technology Education, NGSS Engineering) — Alignment Guide for Educators and Program Leads

Overview

The Robot Drone League (RDL) immerses students and educators in robotics, drones, electronics, advanced manufacturing, and computer science through hands-on labs and integrated STEM learning. This alignment connects the **Connecticut State Department of Education Technology Education Standards**, **ITEEA Standards for Technological and Engineering Literacy (STEL)**, and **Next Generation Science Standards (NGSS) HS Engineering Design** to the **Robot Drone League (RDL) Challenge and Curriculum**.

The Connecticut Technology Education Standards referenced in this document can be found on the Connecticut State Department of Education website: https://portal.ct.gov/sde/career-and-technical-education/career-and-technical-education/career-clusters-pathways-programs-of-study/science-technology-engineering-mathematics. The ITEEA STEL benchmarks can be found at: https://www.iteea.org/stel. The NGSS Engineering Design standards referenced here can be found at: https://www.nextgenscience.org/topic-arrangement/hsengineering-design.

Standards Crosswalk

Abbrev: Std = Standard; Skills = Key skills from CT/ITEEA/NGSS frameworks; RDL Sections = related manual content; Evidence = artifacts for verification.

Safety & Health

CT Tech Ed Safety / ITEEA STEL 1 / NGSS HS-ETS1-2
Skills: PPE, ESD precautions, tool safety, hazard ID, ergonomic setup, online safety.
RDL Sections: Safety briefings; Design & Safety Requirements; ESD in wiring labs; Flight safety.
Evidence: Safety logs; ESD mat use; inspection checklists; ergonomic workspace plans.

Electronics & Circuitry

CT Tech Ed Electrical Systems / ITEEA STEL 4 / NGSS HS-ETS1-3
Skills: Component ID, schematics, DC/AC theory, analog/digital electronics, soldering, troubleshooting.
RDL Sections: ECP layout; crimping; continuity checks; Arduino integration.
Evidence: Wiring diagrams; assembled PCBs; oscilloscope captures; code linked to hardware.

Robotics & Mechanical Systems

CT Tech Ed Mechanical Systems / ITEEA STEL 7 / NGSS HS-ETS1-2
Skills: Chassis assembly, drivetrain design, manipulator build, autonomous/teleop control.
RDL Sections: goBILDA chassis build; claw; Arduino drive code; scrimmage operations.
Evidence: Build photos; gear ratio calcs; code with comments.

Advanced Manufacturing

CT Tech Ed Manufacturing / ITEEA STEL 8 / NGSS HS-ETS1-1
Skills: Blueprint reading, CAD modeling, CAM/CNC programming, machining, quality measurement.
RDL Sections: CAD review; Onshape parts; precision measurement of parts; additive manufacturing of drone/robot components.
Evidence: CAD exports; G-code; tolerance measurement logs.

Computer Science Integration

CT Tech Ed Systems / ITEEA STEL 3 / NGSS HS-ETS1-4
Skills: Device selection, troubleshooting, network basics, computational thinking, programming, modeling/simulation.
RDL Sections: Arduino/FTW programming; autonomous mission simulation; data logging; networked controller setup.
Evidence: Pseudocode; algorithm diagrams; data visualizations; troubleshooting logs.

Credential Pathways

- **OSHA-10 General Industry**
- **ETA Basic Systems Technician (BST)**
- **NC3 Electricity Introduction & Precision Measurement Instruments**
- **MACWIC Level 1**, **NIMS Machining Level 1**
- **FAA Airframe/A&P**

Evidence Checklist

- Safety logs; PPE and ESD compliance
- CAD screenshots; wiring diagrams; CAM/G-code files
- Breadboard/PCB builds; soldering samples
- Arduino and FTW code with documentation
- Flight logs; inspection sheets; data visualizations

This crosswalk demonstrates how RDL integrates robotics, electronics, advanced manufacturing, and computer science, equipping students and educators with industry-relevant skills and credential readiness.