Drone Technology Program Standards	
1.0	**Introduction to Electronics**
1.1	Describe atomic structure, components of the atom and their charges, and their importance to electronic technology
1.2	Identify common electrical components, quantities, and units
1.3	Explain voltage, current, resistance, and continuity in electric circuits
1.4	Calculate and apply Ohm's law and Kirchoff's law, energy and power
1.5	Build DC series, parallel, and series parallel circuits, and make measurements
1.6	Build a simple electronic circuit/device/component to solve a simulated scenario
2.0	**Design & Documentation**
2.1	Introduces the engineering design process and stresses the importance of cooperation, teamwork, and documentation to solve problems.
3.0	**Safety Considerations**
3.1	Stresses the importance of adopting a "safety attitude" when building and flying a drone. Covers workshop safety and outdoor flying.
4.0	**Airframes**
4.1	Covers history of helicopter design, early multirotor design, various configurations, airframe sizes, and construction materials.
5.0	**Electric Motors**
5.1	Discusses AC/DC motor differences, history of electric motors, brushed vs. brushless motors, Kv ratings, and calculation of motor capabilities for a drone build.
6.0	**Propellers**
6.1	Covers history of propeller design, fixed-pitch and constant speed blades, airfoil design, size, pitch, and blade-count. Includes balancing tips and construction materials.
7.0	**Electronic Speeds Controllers (ESCs)**
7.1	Introduces role of ESCs, how they work, PWM, PPM, amperage and voltage ratings, ESC calibration, SimonK vs. BLHeli firmware options and BEC, OPTO, and UBEC.
8.0	**Flight Controllers**
8.1	Introduces role of flight controllers, how they work, introduces sensors, sense-and-avoid technology, GPS, open source vs. closed source programming, and compares current FCs on the market.
9.0	**Batteries, Chargers & Connectors**
9.1	Covers history of batteries, various makeups, reactions and chemistry, parallel vs. serial arrangements, rechargeable batteries, LiPo battery characteristics, charging, cell balancing, and various connectors.
10.0	**Transmitters & Receivers**
10.1	Introduces history of radio control systems, controllers, transmitters, and receivers, frequency bands, and programming transmitters.
11.0	**Cameras, Gimbals & Other Payloads**
11.1	Covers payload considerations, camera options, resolution, still photography, video photography, vibration and Jello™ effect, exposure settings, camera lenses, video frame rate, image files, delivery payloads, and other payload possibilities.
12.0	**Ground Control Stations & FPV**
12.1	Introduces telemetry, data tracking, mission planning, and 3D mapping and modeling. Covers first-person-view flying safety and drone racing options.
13.0	**Drone Maintenance & Battery Care**
13.1	Emphasizes importance of pre-flight checklists and logging flights. Stresses safety when using LiPo batteries including proper charging methods, discharging, handling, and disposal.
14.0	**Efficiency vs. Performance**

14.1	Revisits concepts that influence efficiency and performance in drone builds. Covers configurations, efficiency in propellers and motors. Discusses building or buying a drone.
15.0	**Basics of Flight**
15.1	Introduces aerodynamics, history of flight, Newton's Laws of Motion, Bernoulli's Principle, four forces of flight, three axes of flight, how they apply to drone flight. Reveals issues aircraft pilots encounter including airspace, traffic patterns, and safe altitudes.
16.0	**Beginning Flight Skills**
16.1	Discusses flight considerations for the beginner including controller basics. Introduces four beginning skills for acquiring flight competency.
17.0	**Advanced Flight Skills**
17.1	Introduces five advanced skills for acquiring flight competency.
18.0	**Common Sense Flying**
18.1	Discusses responsibility of flying and being "neighborly." Discusses building or buying a drone.
19.0	**Pathway to Certification**
19.1	Covers role of the FAA and NTSB. Stresses importance of regulation, and lists registration and recreational use of drones. Section 333 Exemptions and Part 107 Rules are explained.
20.0	**Drone Theory**
20.1	Covers nomenclature, reputation, configurations, basic components, and current/future uses of drones.
21.0	**Airspace Classifications & Operating Requirements**
21.1	Covers airspace classifications, how to identify them on Sectional Charts and regulations governing sUAS flight in and around airspace.
22.0	**Aviation Weather, Effects & Sources**
22.1	Covers effects of weather on flight including altitude, cloud formations, thunderstorms, and fog.
23.0	**sUAS Loading & Performance**
23.1	Covers weight and balance considerations for payload. Also, effects of physics on flight maneuvers regarding Center of Gravity.
24.0	**Emergency Flight Procedures**
24.1	Covers types of emergencies including lost link and fly-aways and how to respond to them.
25.0	**Crew Resource Management (CRM)**
25.1	Covers Remote PIC decision-making when recognizing crewmember health. Includes physiological and medical issues.
26.0	**Radio Communications**
26.1	Covers types of radio communications used by manned pilots and how to locate the frequencies.
27.0	**Airport Operations**
27.1	Covers operations around airports including standard traffic patterns and other issues the Remote PIC needs to be aware of.
28.0	**Maintenance & Inspection Procedures**
28.1	Covers preflight responsibilities and importance of documentation required by the FAA.