

Avionics/Drone Electronics: Scope & Sequence

Year 1, Semester 1

ET101 Avionics Technologies Fundamentals I
(94 days)

District Pre-Assessment

Unit 1 (12 Days)

Introduction:

- Safety/Class Management
- Tools and Test Equipment
- Wire Prep/Lab Volt

CTSO Integration First draft resume/CTSO meetings weekly

Professional Skills: 1.B, 4.B,5.D, 6.A

Academic Standards: 5.NF.B.6, 6.RP.A.3

Work-based Learning: Conducting a meeting

Technical Standard: 1.1-6, 3.1, 4.1-3

Unit 2 (20 Days)

Magnetism:

- Atoms, Matter, Energy
- Electricity/ Electrical
- Magnetism
- Cannon Plug Prep/Lab Volt

CTSO Integration (Leadership Skills): Cover Letter

Professional Skills: 1.D, 2.C

Academic Standards: ELA.11-12.W.5 5.NF.B.7

Work-based Learning: Guest Speaker Cover letters

Technical Standard: 5.4, 7.1

Unit 3 (20 Days)

Direct Current (DC) Fundamentals:

- DC Calculations
- Series DC
- Parallel DC
- Solder/Lab Volt

CTSO Integration (Leadership Skills): Business Letters

Professional Skills: 1.D

Academic Standards: ELA.11-12.W.4, 5NF.B.3, 6.EE.A.2

Work-based Learning: Guest Speaker Business Letters

Technical Standard: 2.1-3 3.1-3 ,5.1-6

Unit 4 (14 Days)

Basic Components:

- Circuit Control Devices
- Circuit Protection Devices
- Schematics/Lab Volt

CTSO Integration (Leadership Skills): SkillsUSA Fall Conference

Professional Skills: 3.B

Academic Standards: ELA.11-12.SL.4

Work-based Learning: Delivering Speeches, Multimedia Presentations

Technical Standard: 9.1-3

Unit 5 (20 Days)

Alternating Current (AC) Fundamentals:

- Alternating Current
- AC Calculations
- Lab Volt

CTSO Integration (Leadership Skills):Community Service

Professional Skills: 7.C

Academic Standards: ELA.11-12.RI.10, ELA.11-12.W.4-5

Work-based Learning: Emails/Forms

Technical Standard: 6.1,8.2,9.1

Unit 6 (8 Days)

Generation and Storage of Electricity:

- Battery/Chargers/Connectors
- Generators/Alternators
- Power Supplies
- Transformers/Lab Volt

CTSO Integration (Leadership Skills):CTSO Meeting

Professional Skills: 2.C

Academic Standards: 7.RP.A.3

Work-based Learning: AerSale Industry Tour

Technical Standard: 10.1-4, 11.1-2

Semester Exam

Year 1, Semester 2

ET102 Avionics Technologies Fundamentals II
(86 days)

Unit 7 (12 Days)

Solid State Components:

- Semiconductors
- Electrostatic-Sensitive Devices (ESD)
- Breadboard/Lab Volt

CTSO Integration (Leadership Skills):CTSO Meeting

Professional Skills: 8.D, 9.C

Academic Standards: ELA.11-12.RI.2,10

Work-Based Learning Instructions Reports SOPs

Technical Standard: 12.1-9

Unit 8 (12 Days)

Advanced Solid-State Components:

- Special Diodes
- Advanced Transistors
- Lab Volt

CTSO Integration (Leadership Skills): CTSO Meeting

Professional Skills: 8.B, 9.A

Academic Standards:ELA.11-12.SL.3

Work-Based Learning Interviewing Clients/Quality Control

Technical Standard: 12.6, 14.2

Unit 9 (14 Days)

Frequency Generation:

- Amplification
- Oscillators
- Filters
- Lab Volt

CTSO Integration (Leadership Skills): Internship/Externship

Professional Skills: 7.C

Academic Standards:11-12.W.9

Work-Based Learning: Workplace Visit

Technical Standard: 12.5, 13.1-2, 14.2

Unit 10 (20 Days)

Digital Theory:

- Numbering Systems
- Logic Functions
- Lab Volt

CTSO Integration (Leadership Skills): Mentoring/Job Shadow

Professional Skills:1.D, 3.B

Academic Standards:ELA.11-12.SI.3

Work-Based Learning Workplace Visit

Technical Standard: 14.1, 15.1-4

Unit 11 (28 Days)

UAV Theory and Design:

- UAV Introduction
- UAV Safety

Certification: Snap On Meter exam

CTSO Integration (Leadership Skills): SkillsUSA National Conference

Professional Skills:1.D, 2.A

Academic Standards: ELA11-12.SI.4

Work-Based Learning Field Trip

Technical Standard: 1.6,2.2,5.6,12.9

District Post-Assessment

Year 2, Semester 1

ET201 Avionics Technologies Services I

(90 days)

Unit 1 (15 Days)

Flight Fundamentals:

- Theory of Flight
- Lab: UAV FAA Regulations

CTSO Integration (Leadership Skills): Giving a Presentation

Professional Skills: 1.A - D, 8.E

Academic Standards: ELA.11-12.RI.7, ELA.11-12.W.2,

ELA.11-12.L6,, ELA.11-12.SL.4

Work-Based Learning: Giving a speech

Technical Standard: 4.1-3

Unit 2 (15 Days)

Corrosion Control:

- Corrosion Prevention
- UAV Airframes

CTSO Integration (Leadership Skills): CTSO Meeting

Professional Skills; 2.A

Academic Standards:ELA.11-12.W.2

Work-Based Learning: Guest speaker/ Impromptu speeches

Technical Standard: 1.5

Unit 3 (15 Days)

Manuals and Drawings:

- Manuals/Illustrations
- UAV Design & Documentation

CTSO Integration (Leadership Skills): Interview Prep

Professional Skills: 1.B, 4.F

Academic Standards:ELA11-12.SL.4

Work-Based Learning MOC Interview

Technical Standard: 4.1

Unit 4 (15 Days)

Technical Pubs/Data Bus:

- Standards Management
- UAV Build Part 1

CTSO Integration (Leadership Skills): SkillsUSA Conference

Professional Skills: 1.D

Academic Standards: ELA.11-12.W.2

Work-Based Learning Impromptu Speeches

Technical Standard: : 4.1-3

Unit 5 (15 Days)

Power Distribution:

- Systems/Batteries
- UAV Motors/Props

CTSO Integration (Leadership Skills):

Professional Skills: 1.D

Academic Standards: ELA.11-12.L.6

Work-Based Learning

Technical Standard: 15.3

Unit 6 (15 Days)

Electronic Instrument Systems:

- 1.2.3 Generation
- Integrated Modular
- UAV Build Part 2

CTSO Integration (Leadership Skills): SkillsUSA Regional Conference

Professional Skills: 8.C, 8.D

Academic Standards: ELA.11-12.SL.3

Work-Based Learning: AerSale Industry Tour

Technical Standard: 14.2

Semester Exam

Year 2, Semester 2

ET202 Avionics Technologies Services II
(90 days)

Unit 7 (15 Days)

FCC Element 1 Exam Prep/Integrated Monitoring Systems:

- Engine Indicating & Crew Alerting System (EICAS)
- Electronic Centralized Aircraft Monitor (ECAM)
- Lab: Dynon Build

CTSO Integration (Leadership Skills): Job Application

Professional Skills: 1.C, 1.D

Academic Standards: ELA.11-12.RI.2

Work-Based Learning Awards/Scholarships Applications

Technical Standard: 14.1

Unit 8 (15 Days)

FCC Element 1 Exam Prep/Integrated Test Equipment:

- Built In Test Equipment (BITE)
- CMCS/CFDS
- Dynon Build/

CTSO Integration (Leadership Skills): Apprenticeship

Professional Skills: 5.C

Academic Standards: ELA.11-12.W.5

Work-Based Learning Interviewing clients

Technical Standard: 14.2

Unit 9 (15 Days)

FCC Element 3 Exam Prep/Autopilot and Auto Flight Systems:

- Theory
- UAV; Electronic Speed Controller (ESC), Flight Control (FC)
- Dynon Build/

CTSO Integration (Leadership Skills): Career Fair

Professional Skills: 6.A

Academic Standards: ELA.11-12.SL.4

Work-Based Learning Interviewing clients

Technical Standard: 15.2

Unit 10 (14 Days)

FCC Element 3 Exam Prep/Communications & Entertainment:

- Aircraft Communications Addressing and Reporting System (ACARS)/Interphones
- UAV Standard T/R Modules

CTSO Integration (Leadership Skills): Mock Interview

Professional Skills: 1.D

Academic Standards: ELA.11-12.RI.2

Work-Based Learning Interviews

Technical Standard: 13.1-2

Unit 11 (7 Days)

FCC Element 3 Exam Prep/ Global Positioning Systems:

- Theory; T/S; Maintenance
- UAV Cameras

CTSO Integration (Leadership Skills): SkillsUSA State Conference

Professional Skills: 4.E

Academic Standards: ELA.11-12.RI.7, ELA.11-12.W.4,7,8,9

Work-Based Learning Impromptu Speeches

Technical Standard: 2.1

Unit 12 (24 Days)

FCC Element 3 Exam Prep/ Application Lab:

- Dynon Skyview Avionics

CTSO Integration (Leadership Skills): SkillsUSA National Conference

Professional Skills: 9.C

Academic Standards: ELA.11-12.SL.4

Work-Based Learning Charts Graphs Diagrams

Technical Standard: 4.1

Certifications

General Radiotelephone Operator | Element 1 Basic Radio Law

Operating Practice and Element 3 Electronic Fundamentals & Techniques License Exams (FCC)

ADE Technical Skills Assessment

Common AZCCR Math Standards (CAMS)

English Language Art Standards (ELAS)

Federal Communication Commission (FCC)