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

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

Year 1, Semester 2
ET102 Avionics Technologies Fundamentals II
(86 days)

Unit 5 (20 Days)

Alternating Current (AC) Fundamentals:
- Alternating Current
- AC Calculations
- Lab Volt

CTSO Integration (Leadership Skills):Community Service Professional Skills: 7.C
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

Semester Exam

Unit 7 (12 Days)

Solid State Components:
- Semiconductors
- Electrostatic-Sensitive Devices (ESD)
- Breadboard/Lab Volt

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

Academic Standards: ELA.11-12.SL.3
Work-Based Learning Interviewing Clients/Quality Control
Technical Standard: 12.6, 14.2

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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
Academic Standards:ELA.11-12.SL.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.SL.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
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
Academic Standards:ELA11-12.SL.4
Work-Based Learning MOC Interview
Technical Standard: : 4.1-3

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
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

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)