Aviation

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Content	Skills	Learning Targets	Standards	Assessment	Resources & Technology
CEQ: **WHAT ARE THE ELEMENTS OF FLIGHT?** **WHAT ARE THE DESIGN BASICS OF AN AIRCRAFT?** **WHAT ARE THE BASICS OF AIRPORT OPERATIONS?** **WHAT IS THE HISTORY OF FLIGHT?** *UEQ:* *How do Airplanes take flight?* *Can you identify major airplane parts?* **A: Aviation Fundamentals** A1. Principles of Flight A2. Airplane Parts	**A: Aviation Fundamentals** A1a: Identify an airfoil A1b: Understand the density characteristics of the atmosphere. A2. Identify airplane parts: Empennage, fuselage, engine, wing, and control surfaces	**A: Aviation Fundamentals** A1b: I can identify differences of densities in objects A1a: I can draw and construct an airfoil A2: I can identify the parts of an empennage: vertical stabilizer, horizontal stabilizer, rudder, elevator. A2: I can identify the fuselage, engine, wing, and control surfaces		**A: Aviation Fundamentals** **CFA** A1b: Penny Density Lab **CFA** A1a: CFA Wind Tunnel activity **CFA** A1-2: Flight principles/airplane ID Quiz	**A: Aviation Fundamentals** A1b: Penny Density equipment A1a: Airfoil Lift Calculation Worksheet A1ab: Understand Flight" Notebook Presentation A2: Airplane parts study guide A1-2: Flight Principles study guide

UEQ: *What are the broad design aspects of an airplane?* *Why assemble airplane kits?* *Why is it important to follow blueprint directions?* *How is observation an important skill?* **B: Airplane Design** B1. Aspect Ratio, Reaction Arm, Wing Area, and Wing Load Labs B2. Project: Mini Maxer	**B: Airplane Design** B1. Identify Aspect Ratio, Reaction Arm, Wing Area, and Wing Loads of an airplane. B1: Identify how Aspect Ratio, Reaction Arm, Wing Area and Wing Loads will affect the flight of an airplane. B2. Read blueprints. Construct Mini Maxer plane to specifications. Test fly Mini Maxer.	**B: Airplane Design** B1a: I can identify the aspect ratio and reaction arm of an airplane. B1b: I can identify how the Aspect Ratio, Reaction Arm, Wing Area and Wing Loads affect the flight of an airplane. B1a: I can calculate wing area and wing load of an airplane B2: I can follow blueprint plans to construct an airplane. B2: I can observe flight characteristics of a model airplane for the purposes of straight and level flight.		**B: Airplane Design** **CFA** B1: Evaluate lab reports **CFA** B2: Observe construction. Grade completed model. **VFA** B2: Observe flight of completed airplane **CSA** B2: Flight Characteristic Summary report.	**B: Airplane Design** B1. Lab handouts B1: Aspect Ratio presentation B1: Reaction Arm presentation B1: Wing Area and Wing Load presentation B2: Sig Mini Maxer Airplane Kit for each student B2. SIG Mini Maxer Airplane Kit demo model B2: Flight Characteristics Summary report handout

October

Content	Skills	Learning Targets	Assessment	Resources & Technology
UEQ: *What are the basic operations of a class D airport?*	**C: Airports** C1. Label runway and taxiway markings C2. Identify flight patterns	**C: Airports** C1a: I can design an airport with proper runway markings	**C: Airports** **CSA** C1-2. Airport map quiz **CFA** C1ab: Airport	**C: Airports** C1. "*Airports" Notebook presentation*

C: Airports C1: Airport & Runway Identification C2: Flight Patterns C3: Communication protocal *UEQ:* *Are you able to complete a flight assignment?* **D: Flight Simulation** D1. Simulator Training D2. Flight Assignment	for arrival and departure of a class D airport. C3: Communicate the proper arrival of an aircraft to a class D airport. **D: Flight Simulation** D1. Train for future flight assignment D2. Complete flight assignments	C1b: I can design an airport with proper taxiway markings C2: I can label the proper flight patterns of an airport C3: I can perform the proper communication protocal for landing an airplane at a class D airport. **D: Flight Simulation** D1: I can fly successfully from Bemidji to Duluth to Brainerd and back to Bemidji on a flight simulator application.	Drawing excercise **D: Flight Simulation** CFA D1-2: Evaluate Flight Data	**D: Flight Simulation** D1-2. Flight Simulator 2000

November

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UEQ: *What are the basic operations of a class D airport?* **E: Sectional Charts** E1: Airport Information E2: Airspace Information E3: Navigating with a Sectional Chart	**E: Sectional Chart** E1. Identify Airport Information E2. Identify different Airspace E3: Navigating between various points using a sectional chart	**E: Sectional Charts** E1: I can identify the CTAF, AWOS, runway altitude and runway length of any runway in MN. E2: I identify B, D, and E airspace in MN E3: Given lat/long, I can identify a specific airport. With a given heading and distance, I can find a destination airport	**E: Sectional Charts** **CSA** E1-3. Sectional Chart Activity **CFA** E1ab: Sectional Chart Discovery	**E: Sectional Charts** E1. "Twin Cities" sectional chart with sectional plotter
