# Flight Training Course No. 40540 Credit: 1.0

|  |  |  |  |
| --- | --- | --- | --- |
| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Aviation Maintenance (47.0000) - Airframe Strand

Course Description: An **application level** course that builds upon knowledge previously learned on aircraft systems. Students will additionally explore weather, operations, and basic navigation principles.(Prerequisite: Aviation Systems or Aviation Fundamentals.)

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Understanding Weather and Atmosphere

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Interpret weather symbology. |  |
| 1.2 | Define select aviation weather terms. |  |
| 1.3 | Infer that weather tools are critical to safe and comfortable flight but have limitations. |  |
| 1.4 | Analyze how air masses change as they pass over various land and water surfaces. |  |
| 1.5 | Summarize large scale circulation patterns in the atmosphere. |  |
| 1.6 | Summarize the role of uneven heating on the creation of weather. |  |
| 1.7 | Connect convective currents resulting from uneven heating to the creation of turbulence. |  |
| 1.8 | Assess if the freezing level will affect a flight. |  |
| 1.9 | Name the conditions associated with each stage of thunderstorm development and assess the possible risk(s) with a thunderstorm forecast. |  |
| 1.10 | Explain the four types of lifting actions and their relationship to thunderstorm development. |  |
| 1.11 | Differentiate among different types of precipitation and various components of the atmosphere |  |
| 1.12 | Identify the types of precipitation and clouds that form with different frontal boundaries. |  |
| 1.13 | Categorize different types of clouds and predict weather conditions based on cloud type. |  |
| 1.14 | Predict the height of a cloud base. |  |
| 1.15 | Analyze weather scenarios to determine how fronts affect the flight experience. |  |

## Benchmark 2: Weather Observations and Forecasts

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Make observations and analyze current weather, weather forecasts and charts to determine go/no-go of a planned flight. |  |
| 2.2 | Compare the different types of weather briefings available and explain when each would be appropriate during flight planning to make a go/no-go decision. |  |
| 2.3 | Compare the different types of weather forecasts and explain how one might use them to develop a complete picture of the weather during flight planning. |  |
| 2.4 | Decode and interpret Meteorological Aerodrome Reports (METAR) and Pilot Reports (PIREP). |  |
| 2.5 | Decode and interpret sources of weather information used in flying including Terminal Aerodrome Forecasts (TAF), Airman’s Meteorological Information (AIRMET), Significant Meteorological Information (SIGMET), and winds and temperatures aloft forecasts. |  |
| 2.6 | Summarize the differences between weather reports and weather forecasts. |  |
| 2.7 | Analyze weather decision making using the Perceive—Process—Perform risk-management framework. |  |
| 2.8 | Analyze weather products and services to determine their effectiveness for both preflight planning and inflight updates. |  |
| 2.9 | List different in-flight weather services a pilot may use and actions a pilot may take to ensure weather does not adversely affect the flight. |  |
| 2.10 | Use concepts to solve non-routine problems pilots may be confronted with en route. |  |

## Benchmark 3: Understanding Airport Operations

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Analyze an airport diagram and interpret airport information contained in one. |  |
| 3.2 | Apply concepts to determine ways in which aircraft incidents at airports can be avoided. |  |
| 3.3 | Apply understanding of airport information to prepare for a flight scenario. |  |
| 3.4 | Compare the capabilities of primary radar, radar beacon systems, and Automatic Dependent Surveillance-Broadcast (ADS-B) systems. |  |
| 3.5 | Compare the communications practices that pilots should use at towered and nontowered airports. |  |
| 3.6 | Compare various sources of airport data and explain the types of information that each source contains. |  |
| 3.7 | Construct a simple approach path indicator. |  |
| 3.8 | Critique recorded pilot and air traffic controller communications. |  |
| 3.9 | Distinguish between different markings and signs and explain how a pilot should react to them. |  |
| 3.10 | Explain how a pilot would enter an airport traffic pattern and how to scan for traffic. |  |
| 3.11 | Formulate a plan for aircraft movement as a pilot and as an air traffic controller. |  |
| 3.12 | Identify different categories and types of airports. |  |
| 3.13 | Identify different types of airport signs and markings. |  |
| 3.14 | Identify the causes and effects of wake turbulence. |  |
| 3.15 | Identify ways aircraft can avoid collisions. |  |
| 3.16 | Interpret the meaning of common phrases used by ATC and other pilots in the airport environment. |  |
| 3.17 | Summarize the need for standardized traffic pattern procedures and recall the different legs of an airport traffic pattern. |  |
| 3.18 | Recall the phonetic alphabet and light gun signals. |  |
| 3.19 | Recognize the various forms of airport lighting systems and their intended purpose. |  |
| 3.20 | Summarize the services ATC is able to provide pilots. |  |

## Benchmark 4: Aeronautical Charts and Airspace

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Analyze the topography, facilities, and obstacles, in a given region for limitations that may affect a given UAS or manned flight. |  |
| 4.2 | Assess whether or not a particular flight may be conducted based upon pilot qualifications and airspace regulations. |  |
| 4.3 | Identify different aeronautical chart symbols and what they mean. |  |
| 4.4 | Identify different categories and types of airspace. |  |
| 4.5 | Calculate local time and Coordinated Universal Time. |  |
| 4.6 | Evaluate a prescribed route of flight to determine appropriate landmarks. |  |
| 4.7 | Show the location of an object identified in the Aeronautical Chart Bulletin on a sectional chart. |  |
| 4.8 | State position using latitude and longitude. |  |

## Benchmark 5: The Geometry of Navigation

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Apply the concepts of the E6-B to determine wind correction angle, heading, and groundspeed. |  |
| 5.2 | Apply the concepts of wind and magnetic corrections in an explanation of how an aircraft compensates for those effects during flight. |  |
| 5.3 | Calculate compass headings after taking true course, wind correction angle, magnetic variation, and magnetic deviation into account. |  |
| 5.4 | Compare preflight navigation planning results with in-flight performance. |  |
| 5.5 | Construct a wind triangle to model the effect of wind on true course. |  |
| 5.6 | Measure distances and true course on an aeronautical chart using two methods. |  |

## Benchmark 6: Reading Aircraft Performance Charts

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Assess the safety of a proposed flight based on performance calculations for varying density altitude conditions. |  |
| 6.2 | Calculate density altitude using a variety of tools, including charts and the E6B. |  |
| 6.3 | Calculate range, endurance, and required fuel using industry standard tables and graphs. |  |
| 6.4 | Calculate the weight and balance of an aircraft using industry standard tables and graphs. |  |
| 6.5 | Estimate takeoff and landing distances using industry standard tables and graphs. |  |
| 6.6 | Estimate time, fuel, and distance required for a climb using industry standard tables and graphs. |  |
| 6.7 | Explain factors that affect fuel planning procedures. |  |
| 6.8 | Explain factors that affect required takeoff and landing distances for aircraft. |  |
| 6.9 | Explain how an aircraft’s operation is affected by weight and balance. |  |
| 6.10 | Predict how different density altitude conditions will affect aircraft performance. |  |
| 6.11 | Explain important terms and information relevant to density altitude, weight, and balance. |  |

## Benchmark 7: Certificates, Regulations, and Safety

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Assess a pilot’s go/no-go decisions in relation to the IMSAFE (Illness, Medication, Stress, Alcohol, Fatigue, Eating) checklist. |  |
| 7.2 | Explain the importance of medical certification including conditions that may require a pilot to obtain a special issuance medical certificate. |  |
| 7.3 | Organize medical certification standards according to medical certificate classifications (e.g. First-Class, Second-Class, Third-Class). |  |
| 7.4 | Identify the known side effects of some common drugs. |  |
| 7.5 | Distinguish the differences between the four types of publications produced by the FAA and NTSB publications applicable to general aviation flying. |  |
| 7.6 | Assess scenarios related to FAR Part 91 (flights for non-commercial operations). |  |
| 7.7 | Identify and classify information contained in a sample document as either an Advisory Circular (AC), Airworthiness Directive (AD), Notice to Airmen (NOTAM), or part of NTSB Part 830. |  |
| 7.8 | Identify the types of information contained in the Aeronautical Information Manual (AIM). |  |

## Benchmark 8: Impacts of Flight on Human Anatomy and Physiology

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Describe the cause and effect of common visual illusions. |  |
| 8.2 | Describe what a pilot should do to treat symptoms of hypoxia, hyperventilation, decompression sickness, carbon monoxide poisoning, or excessive exposure to carbon dioxide. |  |
| 8.3 | Distinguish between the symptoms of hypoxia, hyperventilation, decompression sickness, carbon monoxide poisoning, and excessive exposure to carbon dioxide. |  |
| 8.4 | Identify parts of the human ear associated with balance and orientation. |  |
| 8.5 | Label an anatomical diagram of a human eye. |  |
| 8.6 | List methods pilots can use to prevent spatial disorientation. |  |
| 8.7 | Predict sensations a pilot may feel when specific physical motions are encountered. |  |
| 8.8 | Illustrate aircraft positions given specific flight scenarios. |  |

## Benchmark 9: Aeronautical Decision Making

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Apply multiple risk management models to Aeronautical Decision Making (ADM). |  |
| 9.2 | Assess the safety of a proposed flight based on scenarios related to hazardous attitudes and other factors. |  |
| 9.3 | Explain the elements of common risk management models. |  |
| 9.4 | List factors that affect a pilot’s ability to fly safely. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

pathwayshelpdesk@ksde.org



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

The Kansas State Department of Education does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities and provides equal access to any group officially affiliated with the Boy Scouts of America and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: KSDE General Counsel, Office of General Counsel, KSDE, Landon State Office Building, 900 S.W. Jackson, Suite 102, Topeka, KS 66612, (785) 296-3201.