# Flight Training Course No. 40540 Credit: 1.0

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| **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:

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