

Flight Guide

UMKC Introduction to Aircraft Flight Operations

Participants in the UMKC Introduction to Aircraft Flight Operations course receive 10 hours of classroom instruction and 5 hours of combined flight instruction in an aircraft and an FAA-approved flight simulator. The flights can be chosen from the choices below, or can be a separate arrangement with the flight instructor. Each flight experience lasts about 1 hour, so students can select between four to five types of flights.

Types of flights:

- Flight Training (Page 2)
- Flight Testing (Page 3)
- Flight Experiences and Endorsements (Page 4)

For more information about the course or flight options, contact:

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Flight Training

A.1 – Basic Aircraft Control

Introductory experience in aircraft, including aircraft controls and instrument interpretation. Students will use ailerons, elevator, rudder, and throttle inputs to track roll angle, pitch, angle, turn rate, heading, airspeed, and altitude.

A.2 – Intermediate Aircraft Control

Build on basic aircraft control to perform climbs, descents, and turns over a range of airspeeds. Includes basic emergency procedure practice, slow flight, stalls, and landings.

A.3 – Instrument Flying & Approaches

Introduction to flying in instrument conditions without relying on seeing outside the cockpit. Students will learn basic attitude control and perform climbs, descents, and turns solely by reference to the instruments. Build on basic instrument flying to perform instrument procedures, including navigation, holds, and instrument approaches

A.4 – Intermediate Proficiency Check (61.57)

Rated instrument pilots that are not current can request an instrument proficiency check using a combination of the flight simulator and the aircraft. Students will perform attitude flying, navigation, instrument approaches, and emergency procedures of Instrument Rating – Airplane Airman Certification Standards.

A.5 – Commercial Maneuvers

Focus on coordinated aircraft control with maneuvers required for the commercial airplane pilot practical exam. Students will fly steep turns, steep spirals, and eights on pylons, in addition to energy-exchange maneuvers such as chandelles, lazy eights, and 180-deg power off landings.

A.6 – Multi-Engine Maneuvers

Practice flying with the added safety and complexity of a second engine. Students will learn how to perform start up and pre-takeoff operational check of a multi-engine aircraft. Once airborne, practice maneuvers with one engine inoperative, including demonstrating minimum controllable airspeed, landing approaches, and go-arounds. Note: Flying a multi-engine aircraft will require an additional fee.

A.7 – Introduction to Gliding

Learn the basics of aerotow, maneuvering, soaring, and landing in a tandem, 2-seat Schweizer 2-22 glider. Students will learn the basics of soaring signals between the tow plane and glider, then practice flying the glider while on tow up to 3000 ft. Once at altitude, the student will release the glider and practice coordinated turns, airspeed control, stalls, and spoiler deployment. Students will then learn to fly the glider traffic pattern on approach to landing.

Flight Testing

B.1 – Takeoff and Landing Performance

Conduct flight tests to determine the takeoff and landing distances using normal, short-field, and soft-field techniques. Students will use a flight data recorder to analyze the ground roll and obstacle clearance distances required for both takeoff and landing, then compare those measured values to the published performance.

B.2 – Cruise and Climb Performance

Use saw tooth climbs and level accelerations to measure how climb rate changes with power and airspeed. Estimate the power required for level flight using stabilized cruise segments and estimate the maximum range and maximum endurance for the aircraft.

B.3 – Lateral-Directional Stability

Use step inputs and doublets to assess the lateral and directional static-stability and dynamics of the aircraft. Students will demonstrate the lateral stability associated with the dihedral effect, spiral mode, and Dutch roll mode. Flight data measurements can be used to estimate the damping ratio or time-to-double for each mode.

B.4 – Longitudinal Stability

Use step inputs, doublets, and trim perturbation to assess the static and dynamic longitudinal stability of the aircraft. Measure the speed stability and estimate control linkage stiction, then estimate the frequency and damping of the short period and phugoid modes.

B.5 – Flight Envelope Testing

Identify the level and accelerated stall boundary at different flap settings. Explore how to perform structural and airspeed flight envelope expansion tests to develop a V-n diagram specific to the weight and configuration of the aircraft.

B.6 – 20-Minute Flight Test

Fly the UMKC 20-Minute Flight Test card to perform an expedient assessment of the aircraft performance, handling, and stability. The test card includes takeoff, climb, cruise, control, turn, stall, and landing segments. Use energy-method data reduction techniques to identify the specific excess power, showing how climb performance varies with airspeed.

B.7 – EAA Flight Test Manual

Select and fly test cards from the EAA Flight Test Manual, intended for pilots of experimental, amateur-built aircraft characterizing the performance, stability, and handling characteristics of their newly-built aircraft.

Flight Experiences & Endorsements

C.1 – Aerobatic Adventure Flight

Fly with a Nehemiah Aviation in a Bellanca Citabria performing loops, roll, spins, and other aerobatic maneuvers. Experience Gs and unusual attitudes exercising the aircraft through flight envelope of the two-seat, tandem, tailwheel aircraft.

C.2 – Kansas City Airport Tour

Explore Kansas City airports by practicing touch-and-goes at each of the major airports around the area. Depart Downtown Airport (MKC) northbound through the Kansas City Class Bravo airspace for a landing at Kansas City International (MCI), then proceed eastbound to the untowered Midwest National Airport (GPH). Continue to East Kansas City Airport (3GV), Lee's Summit Airport (LXT), Johnson County Executive (OJC), and New Century Air Center (IXD) before returning to Downtown Airport. This flight emphasizes planning, organization, and execution to transition between the airports.

C.3– GPS Skywriting

Communicate with the world using the language of aviation by planning and flying a GPS skywriting flight. Choose a phrase, symbol, or pattern, then generate a flight path to draw in the sky using the aircraft's GPS flight path. Learn the techniques needed to draw using a 100 MPH pen that can't be stopped or lifted. The resulting pattern will be accessible on flight tracking websites and can be plotted on Google Earth using the onboard GPS.

C.4 – Flight Review (61.56)

Perform the flight portion of the FAA 14 CFR 61.56 flight review for pilots needing to update their currency. This flight follows the FAA guidelines for conducting an effective flight review and must be performed with an approved ground review. Includes a logbook endorsement.

C.5 – CFI Spin Endorsement (61.183)

For pilots intending to become a certified flight instructor, explore the flight conditions that could lead to a stall-spin departure, including engine-failed glides, slips, and skids. Demonstrate stalls with at different configurations of power, flaps, slips, and skids. Learn spin awareness, entry, and recovery techniques. Includes a logbook endorsement.

C.6 – Complex Endorsement (61.31)

Learn how to safely fly an aircraft equipped with a controllable-pitch propeller, retractable landing gear, and flaps. Students will fly the Piper Arrow and learn about the normal and emergency procedures for complex aircraft during takeoff, climb, cruise, descent, and landing operations.

C.7 – High-Performance Endorsement (61.31)

Learn to operate aircraft with engines greater than 200HP. This flight focuses on the use of checklists during transition into and out of each phase of flight. Students will fly the 600 HP Beechcraft Baron (sim) or 500HP Piper Aztec (flight) and learn about the engine, hydraulic, electrical, and fuel systems. Note: Flying a multi-engine aircraft will require an additional fee.