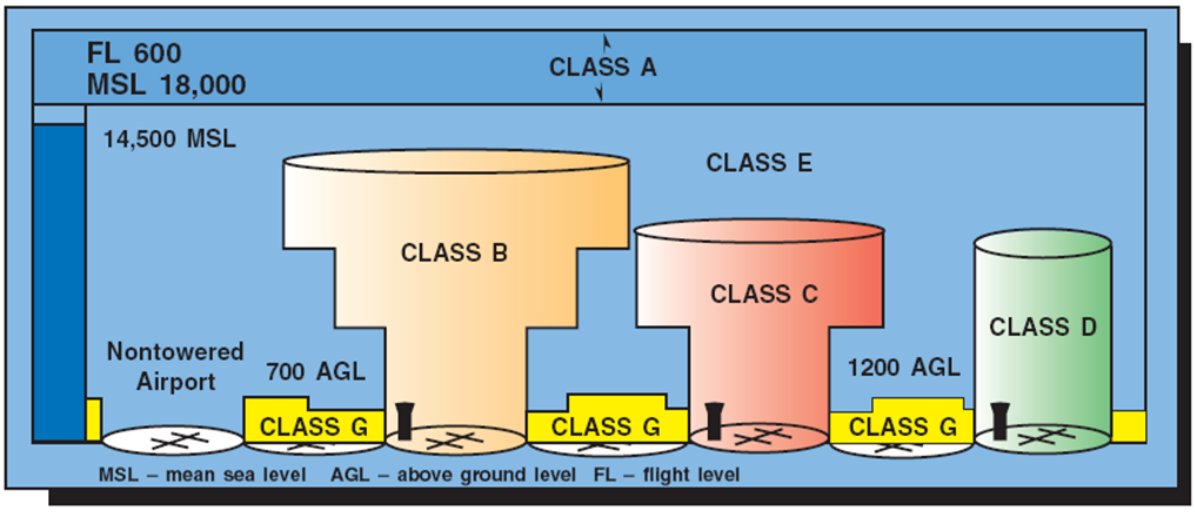
References: 14CFR part 91, AIM, FAA-S-8081-12, FAA-S-ACS-6

Objectives	▪ Understand the national airspace system
Elements	▪ Intro/overview ▪ Airspace classes, operating rules, certification & equipment requirements ▪ VFR weather minimums ▪ Special use airspace ▪ Other use airspace
Schedule	▪ Review lesson objectives ▪ Review lesson material ▪ Conclusion & Review
Equipment	▪ White Board / Markers ▪ Paper sectional / Foreflight
CFI Actions	▪ Present lesson ▪ Use teaching aids ▪ Ask/ answer questions
Student Actions	▪ Participate in discussion ▪ Take notes ▪ Ask / answer questions
Completion Standards	▪ The student displays the ability to differentiate between the types of airspace and their respective weather minimums

Additional Notes: _____



Introduction

Overview

Review objectives / Elements

What

Airspace is defined as, "the portion of the atmosphere above a particular land area, especially above a nation." The atmosphere above the United States is divided into several sectors, or classes and in each different airspace class, specific rules apply.

Why

Different airspaces have been defined to efficiently manage the large amount of air traffic that traverses the sky each day. To fly from place to place, a pilot must know the rules and requirements regarding airspace.

How

Airspace Classes, Operating Rules, Certification, and Equipment Requirements (Pilot's Handbook of Aeronautical Knowledge; AIM 3-2-1)

CLASS AIRSPACE	ENTRY REQUIREMENTS	EQUIPMENT	MINIMUM PILOT CERTIFICATE
A	ATC Clearance	IFR Equipped	Instrument Rating
B	ATC Clearance	Two-Way Radio, Transponder with Altitude Reporting Capability	Private – With Exception
C	Two-Way Radio Communications Prior To Entry	Two-Way Radio, Transponder with Altitude Reporting Capability	No Specific Requirement
D	Two-Way Radio Communications Prior To Entry	Two-Way Radio	No Specific Requirement
E	None For VFR	No Specific Requirement	No Specific Requirement
G	None	No Specific Requirement	No Specific Requirement

Class E Airspace

AIRSPACE FEATURES	CLASS E
VFR MINIMUM VISIBILITY	Below 10,000' MSL - 3 s.m. Above 10,000' MSL - 5 s.m.
VFR MIN CLOUD CLEARANCE	Below 10,000' - 500' Below 1000' Above 2,000' Horizontal Above 10,000' - 1,000' Below 1,000' Above 1 s.m. Horizontal
MIN PILOT QUALIFICATIONS	Student Pilot
VFR ENTRY & EQUIPMENT	None
ATC SERVICES	IFR/IFR Separation VFR advisories on request (permitting)

Definition

- **Controlled airspace that is not designated A, B, C, or D**

Operating Rules and Pilot/Equipment Requirements

- **Previously established rules apply:**
- **Transponder Requirements (91.215(d))**
  - **At or above 10,000' MSL**
    - **Excluding airspace below 2,500' AGL**
  - **Within 30 miles of a class B airspace primary airport, below 10,000' MSL**
  - **Within and above all Class C airspace, up to 10,000' MSL**
  - **Within 10 miles of certain designated airports**
    - Excluding airspace which is both outside the Class D surface area and below 1,200' AG**L**
- **Flying into, within, or across the ADIZ**

Airspeeds (91.117)

- **No more than 250 knots below 10,000' MSL**
- **Below 2,500' AGL within 4 nm of the primary class C, D airspace not over 200 knots**
- **Underlying Class B airspace designated for an airport or in a VFR corridor designated through class B airspace not over 200 knots**

ATC Services

- **There are no communication requirements flying VFR, but you can request traffic advisory services from ATC (Provided on workload-permitting basis)**
  - Communication is required when flying IFR in Class E airspace

Vertical Limits

- **Unless designated at a lower altitude, Class E Airspace begins at 14,500' MSL up to, but not including, 18,000' MSL overlying:**
  - The 48 contiguous states including the waters within 12 miles from the coast
  - The District of Columbia
  - Alaska
  - Extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace

Segments of Class E Airspace

- **Class E and the Low Altitude Airway System**
  - Connects one navaid to another
    - VOR to VOR (Victor Airways)
- **Unless otherwise specified, they extend upward from 1,200' AGL up to, but not including, 18,000' MSL**
  - Mountainous terrain may have a floor above 1,200'
- **Airways are usually 8 NM wide (4 NM on each side of the centerline)**

Class E & Airports

- **Extension to a Surface Area**
  - There are Class E airspace areas that serve as extensions to Class B, Class C, and Class D surface areas designated for an airport. This airspace provides controlled airspace to contain standard instrument approach procedures without imposing a communications requirement on pilots operating VFR
    - EX: Albuquerque (KABQ) – Class E Surface Area
    - EX: Las Vegas Muni (KLVS) – Class E extension

Airspace Used for Transition

- **Allows IFR traffic to remain in controlled airspace while transitioning between the enroute and airport environments**
  - There are Class E airspace areas beginning at either 700' or 1,200' AGL used to transition to/from the terminal or en route environment
- **When Needed for IFR Control Purposes**
  - En Route Domestic Areas

- Provide controlled airspace in those areas where there is a requirement to provide IFR en route ATC services but the Federal Airway System is inadequate
- Airspace areas that extend upward from a specified altitude as an en route domestic airspace

Offshore Airspace Areas

- **Provide IFR enroute ATC services**
  - Airspace areas extending upward from a specified altitude to, but not including, 18,000' MSL to provide controlled airspace beyond 12 miles from the coast of the US

Class D Airspace

AIRSPACE FEATURES	CLASS D
VFR MINIMUM VISIBILITY	3 Statute Miles
VFR MIN CLOUD CLEARANCE	500' Below 1000' Above 2,000' Horizontal
MIN PILOT QUALIFICATIONS	Student Pilot
VFR ENTRY AND EQUIPMENT	Establish Radio Communication
ATC SERVICES	VFR / IFR Separation

Definition

- **Generally, extends from the surface to 2,500 feet above the airport elevation**
  - Conforms to contain instrument approach procedures
- **These airports have a part time operational control tower**
  - Class D only when the tower is in operation
    - Otherwise Class E – ***However, check Chart Supplement to verify***
- **The configuration of Class D airspace is configured to meet the operational needs / instrument procedures of the area**

Operating Rules and Pilot/Equipment Requirements

- **Pilot Certification**
  - No specific certification required
- **Equipment**
  - Two-way radio
    - Must establish two-way radio communication with the tower **prior** to entering the airspace

Class C Airspace

Definition

- **Generally, extends from the surface to 4,000 feet above the airport elevation**
- **Have an operational control tower and are serviced by a radar approach control, and with a certain number of IFR operations or passenger enplanements**
- **The airspace usually consists of a 5 NM radius core surface area that extends from the surface to 4,000 feet above airport elevation, and a 10 NM radius shelf area that extends from 1,200 feet to 4,000 feet above the airport elevation**

Operating Rules and Pilot / Equipment Requirements

- **Pilot Certification**
  - No specific certification required

AIRSPACE FEATURES	CLASS C
VFR Minimum Visibility	3 Statute Miles
VFR Min Cloud Clearance	500' Below 1000' Above 2,000' Horizontal
Min Pilot Qualifications	Student Pilot
VFR Entry and Equipment	Establish Radio Communication Mode C Transponder
ATC Services	IFR/IFR & VFR Separation VFR Traffic advisories (permitting)

Equipment

- **Two-way radio**
  - Must establish two-way radio communication with ATC prior to entering the airspace
- **Operable radar beacon transponder with automatic altitude reporting equipment (Mode C)**

Class B Airspace

AIRSPACE FEATURES	CLASS B
VFR Minimum Visibility	**3 Statute Miles**
VFR Min Cloud Clearance	**Clear of Clouds**
Min Pilot Qualifications	**Private Pilot** **Student w/Endorsement**
VFR Entry and Equipment	**ATC Clearance** **Mode C Transponder**
ATC Services	**All Aircraft Separation**

Definition

- **Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports (IFR traffic)**
  - The configuration of Class B airspace is individually tailored to an area and consists of a surface area and two or more layers
    - Represents an upside-down wedding cake
    - Designed to contain all instrument procedures once entered

Operating Rules and Pilot/Equipment Requirements

VFR Operations

- At least a Private Pilot Certificate is required
  - ***Exception:*** student/recreational pilots seeking private pilot certification with an endorsement (CFR 61.95)
- ATC Clearance is required before entering
  - Specific clearance to enter Class B airspace is required
- Must be equipped with an **operable two-way radio**
- 4096-code Mode C transponder
- Mode C Veil
  - Airspace within 30 nm of a primary Class B airport, from the surface to 10,000' MSL
  - Aircraft operating in this airspace must be equipped with automatic pressure altitude reporting equipment having Mode C capability

IFR operations

- An operable VOR or TACAN receiver
- An operable radar beacon transponder with automatic altitude reporting equipment

Class A Airspace

- **Generally, the airspace from 18,000 feet MSL up to and including FL600, including the airspace overlying the waters within 12 NM of the coast of the 48 contiguous states and Alaska**

Operating Rules and Pilot / Equipment Requirements

- **Unless otherwise authorized, all operations in Class A airspace is conducted under IFR**

Class G Airspace

AIRSPACE FEATURES	CLASS G
VFR min Vis & Clearance 1,200' AGL or less	DAY: 1 S.M. CLEAR OF CLOUDS NIGHT: 3 S.M. 500' BELOW 1,000' ABOVE 2,000' HORIZONTAL
VFR Minimum Visibility	BELOW 10,000' MSL – DAY: 1 S.M. NIGHT: 3 S.M. AT/ABOVE 10,000 MSL – 5 S.M.
VFR Min Cloud Clearance	BELOW 10,000' - 500' BELOW 1000' ABOVE 2,000' HORIZONTAL ABOVE 10,000' – 1,000' BELOW 1,000' ABOVE 1 S.M. HORIZONTAL
Min Pilot Qualifications	STUDENT PILOT
VFR Entry and Equipment	NONE
ATC Services	VFR ADVISORIES ON REQUEST (PERMITTING)

Definition

- **Uncontrolled Airspace**
  - The portion of airspace that has not been designated as Class A, B, C, D, or E
- **Extends from the surface to the base of the overlying Class E airspace**
  - ATC has no authority / responsibility to control air traffic in class G airspace, however there are VFR minimums which apply to Class G airspace

Overview of Airspace Requirements

CLASS AIRSPACE	ENTRY REQUIREMENTS	EQUIPMENT	MINIMUM PILOT CERTIFICATE
A	**ATC Clearance**	**IFR Equipped**	**Instrument Rating**
B	**ATC Clearance**	**Two-way radio, transponder with Altitude Reporting Capability**	**Private – with exception**
C	**Two-way radio communications prior to entry**	**Two-way radio, Transponder with Altitude reporting capability**	**No specific requirement**
D	**Two-way radio communications prior to entry**	**Two-way radio**	**No specific requirement**
E	**None for VFR**	**No specific requirement**	**No specific requirement**
G	**None**	**No specific requirement**	**No specific requirement**

VFR Weather Minimums

BASIC VFR WEATHER MINIMUMS	
AIRSPACE	**FLIGHT VISIBILITY**
CLASS A ……	**Not Applicable**
CLASS B ……	**3 Statute Miles**
CLASS C ……..	**3 Statute Miles**
CLASS D ……	**3 Statute Miles**
CLASS E	
Less than 10,000 feet MSL ……..	**3 Statute Miles**
At or above 10,000 feet MSL ……..	**5 Statute Miles**
CLASS G **1,200 feet or less above the surface (regardless of MSL altitude)**	
Day, except as provided in section 91.155(b) …….	**1 Statute Mile**
Night, except as provided in section 91.155(b) ……	**3 Statute Miles**
More than 1,200 feet above the surface but less than 10,000 feet MSL	
Day ……..	**1 Statute Mile**
Night ……..	
More than 1,200 feet above the surface and at or above 10,000 feet MSL …… ***Exception – 91.155 (b)(2)**	**5 Statute Miles**

Special Use Airspace

- **Special Use airspace exists where activities are confined because of their nature. In special use airspace, limitations may be placed on aircraft that are not a part of the activities.**

Prohibited Areas

- **Airspace within which the flight of aircraft is prohibited**
- **Established for security or other purposes associated with the national welfare**
- **Published in the Federal Register and are depicted on aeronautical charts**

Restricted Areas

- **Flight of aircraft, while not entirely prohibited, is subject to restrictions**
- **Denote the existence of unusual, often invisible hazards to aircraft**
  - Such as artillery firing, aerial gunnery, or guided missiles
- **An aircraft may not enter a restricted area unless permission has been obtained from the controlling agency**
  - If not active, ATC will allow aircraft to operate in the airspace
  - If active, ATC will ensure the aircraft avoids the restricted area (IFR flight plan)
- **Restricted areas are depicted on aeronautical charts and are published in the Federal Register**

Warning Areas

- **Airspace extending from 3 NM outward from the coast of the US, that may be hazardous to nonparticipating aircraft**
  - The activities may be much the same as those for a restricted area
- **The purpose is to warn nonparticipating pilots of the potential danger**
- **Depicted on aeronautical charts**

MOAs (Military Operation Areas)

- **Consist of airspace established for separating certain military training activity from IFR traffic**
- **IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC, otherwise ATC will reroute the traffic**
  - There is no restriction against a pilot operating VFR in these areas
  - Training activities may include aerobatic and abrupt maneuvers
- **MOAs are depicted on aeronautical charts**

Alert Areas

- **Are to advise pilots that a high volume of pilot training or unusual aerial activity is taking place**
- **They are depicted on aeronautical charts**

Controlled Firing Areas

- **Contain activities, which, if not conducted in a controlled environment, could be hazardous to nonparticipating aircraft**
  - Activities here must be suspended when a spotter aircraft, radar, or ground lookout position indicates an aircraft might be approaching the area
- **No need to chart since they do not cause a nonparticipating aircraft to change its flight path**

Other Airspace Areas

- **Airport Advisory Areas**
- **An area within 10 SM of an airport where a control tower is not operating, but where a FSS is located**
- **At these locations, the FSS provides advisory service to arriving and departing aircraft**

Military Training Routes

- **Developed to allow the military to conduct low-altitude, high-speed training.**
- **The routes above 1,500 feet AGL are developed to be flown primarily under IFR, and the routes 1,500 feet AGL and less are for VFR flight**
- **The routes are identified on sectional charts by the designation "instrument (IR) or visual (VR)"**

Temporary Flight Restrictions (TFRs)

- **An FDC NOTAM will be issued to designate a TFR**
  - The NOTAM will begin with the phrase "FLIGHT RESTRICTIONS" followed by the location of the temporary restriction, effective time-period, area defined in statute miles, and altitudes affected
  - The NOTAM will also contain the FAA coordination facility and telephone number, the reason for the restriction, and any other information deemed appropriate
- **Purposes for establishing a TFR:**
  - persons and property in the air or on the surface from an existing or imminent hazard
  - Provide a safe environment for the operation of disaster relief aircraft
  - Prevent an unsafe congestion of sightseeing aircraft above an incident or event, which may generate a high degree of public interest
  - Protect declared national disasters for humanitarian reasons in Hawaii
  - Protect the President, VP, or other public figures
  - Provide a safe environment for space agency operations
- **Very important to check these before flying**

Parachute Jump Areas

- **Published in the Chart Supplement (Formerly A/FD)**
  - Frequently used sites are depicted on sectional charts

Published VFR Routes

- **Transitioning around, under, or through some complex airspace**
  - Also, called: VFR flyway, VFR corridor, VFR transition route, and terminal area VFR route
- **Generally, found on VFR terminal area planning charts**
-

Terminal Radar Service Areas (TRSA)

- **Areas where participating pilots can receive additional radar services**
  - The purpose is to provide separation between all IFR operations and participating VFR traffic
- **The primary airport(s) within the TRSA become Class D Airspace**
  - The remaining area of the TRSA overlies other controlled airspace, which is normally Class E Airspace at 700 or 1,200 feet and established to transition to/from the en route terminal environment
- **TRSAs are depicted on VFR sectional charts and terminal area charts with a solid black line and altitudes for each segment**
  - The Class D portion is charged with a blue segmented line
- **Participation is voluntary, however VFR traffic is encouraged to use the service**

National Security Areas

- **Consists of airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security and safety of ground facilities**
  - Pilots are requested to voluntarily avoid flying through these depicted areas
  - When necessary, flight may be temporarily prohibited

Conclusion & Review

Review the Main Lesson Points

- **Overview of the differences based on airspace and traffic**

REVIEW

1. **Basic VFR weather minimums—for all classes of airspace.**
2. **Airspace classes—their operating rules, pilot certification, and airplane equipment requirements for the following:**
    1. Class A.
    2. Class B.
    3. Class C.
    4. Class D.
    5. Class E.
    6. Class G.
3. **Special use airspace (SUA).**
4. **Temporary flight restrictions (TFR).**