

Federal Aviation Regulations and the Aeronautical Information Manual

OBJECTIVE:

To teach students the content and uses of the Aeronautical Information Manual (AIM), the pertinent parts of the Federal Aviation Regulations (FARs), and other information published by the FAA.

CONTENTS:

- FAR Part 1 (Definitions)
- FAR Part 61 (Certification of Pilots and Instructors)
- FAR Part 91 (General Operating and Flight Rules)
- NTSB 830
- FAA Advisory Circulars
- AIM

SCHEDULE:

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EQUIPMENT:

Dry erase board, markers, FAR/AIM, and ACs.

INSTRUCTOR'S ACTIONS:

Explain the purpose, applicability, and uses of the FARs, the AIM, and advisory circulars.

STUDENTS' ACTIONS:

Listen, take notes, and ask questions.

COMPLETION STANDARDS:

Students will understand the use and applicability of the FARs, the AIM, and advisory circulars.

1) 14 CFR Part 1: Definitions and Abbreviations:

a) Definitions

- 1) **Administrator** means the Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned
- 2) **Aircraft** means a device that is used or intended to be used for flight in the air.
- 3) **Airplane** means an engine driven fixed wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.
- 4) **Altitude engine** means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.
- 5) **Category, Class:**
 - (A) Certification of Aircraft

Aircraft Certification			
Category		Class	Type
Normal	Transport	Airplane	Specific Make and Model Such as: PA-28-201R Hughes 500 Boeing 777
Utility	Experimental	Seaplane	
Acrobatic	Restricted	Rotocraft	
Commuter	Limited	Glider	
	Provisional	Balloon	
<i>Normal</i>	- Certified for Load factor+3.8		
<i>Utility</i>	- Certified for Load factor+4.4		
<i>Acrobatic</i>	- Certified for Load factor+6.0		
<i>Restricted</i>	- Special purpose such as agricultural or fire fighting planes		
<i>Limited</i>	- Military Aircraft converted to limited civilian use		
<i>Provisional</i>	- Interim category for newly designed aircraft that have not met the requirements for initial certification		

(B) Certification of airmen

Pilot Certification		
Category Rating	Class Rating	Type Rating
Airplane	Single-Engine Land Multi-Engine Land Single-Engine Sea Multi-Engine Sea	Specific Make and Model Such as: Boeing 777
Rotocraft	Helicopter Gyroplane	
Glider	---	
Lighter-Than-Air	Airship Balloon	

- 6) **Night** means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.
- 7) **Pilot in command** means the person who:
 - (A) Has final authority and responsibility for the operation and safety of the flight;
 - (B) Has been designated as pilot in command before or during the flight; and
 - (C) Holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight.
- 8) **Rating** means a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations
 - (A) I.e., Private, Commercial, ATP (Certification)

- (B) Multi-engine land instrument airplane is a category and class rating – not certification
- 9) **Small aircraft** means aircraft of 12,500 pounds or less, maximum certificated takeoff weight
- 10) **Large aircraft** means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.
- b) Abbreviations and Symbols – Lists typical symbols for “V-Speeds”, etc
- c) Rules of Construction – Defines words used in the regulations that have special meaning such as:
 - 1) “Shall” – used in an imperative sense
 - 2) “May” – is used in the permissive sense
 - 3) “Includes” – means includes but is not limit to

2) 14 CFR Part 61: Certification: Pilots and Flight instructors:

- a) **Content of Part 61:**
 - 1) Part 61 includes the requirements for issuing pilot, flight instructor, and ground instructor certificates and ratings; the conditions under which those certificates and ratings are necessary; and the privileges and limitations of those certificates and ratings.
- b) **Part 61.3 requirements for certificates and ratings** (Student Pilot is not either)
 - 1) Pilot certificate. A person may not act as pilot in command or in any other capacity as a required pilot flight crewmember unless that person has a valid pilot certificate in that person's **physical possession** or readily accessible in the aircraft.
 - 2) Medical Certificate. A person may not act as pilot in command or in any other capacity as a required pilot flight crewmember of an aircraft unless that person has a current and appropriate medical certificate which is in that person's **physical possession** or readily accessible in the aircraft.
 - 3) Flight Instructors. A person who holds a flight instructor certificate must have that certificate in that person's **physical possession** or readily accessible in the aircraft when exercising the privileges of that flight instructor certificate.
 - 4) Inspection of certificate. Each person who holds an airman certificate, medical certificate, authorization, or license required by this part must present it for inspection upon a request from:
 - (A) The Administrator;
 - (B) An authorized representative of the National Transportation Safety Board; or
 - (C) Any Federal, State, or local law enforcement officer.
- c) **Drugs and Alcohol** (Part 61.14 through Part 61.16):
 - 1) Conviction for DUI.
 - (A) Each person holding a pilot's certificate shall provide a written report to the FAA, Civil Aviation Security Division within 60 days after any of the following:
 - (a) Conviction for DUI
 - (b) Suspension, of a vehicle license for a cause related to DUI
 - (c) Denial of an application for a vehicle license for a cause related to DUI
 - 2) Pilot's License Revocation.
 - (A) Application for any certificate, rating, may be denied for a period of up to 1 year, and/or any rating or certificate may be suspended or revoked for the following actions:
 - (a) Refusal to submit to a drug or alcohol test under Part 121 or 135.
 - (b) Two or more (unrelated) motor vehicle DUI convictions (or license suspensions) within the last 3 years.
 - (c) Failure to report a DUI conviction or drug/alcohol related license suspension to the FAA.
 - (d) A conviction for the violation of any Federal or State drug laws.
 - (e) Committing the act of flying while under the influence of alcohol or drugs
 - (f) Refusal to submit to a drug or alcohol test from a law enforcement officer when:
 - (i) The law enforcement officer is authorized under State or local law to conduct the test or to have the test conducted; and
 - (ii) The law enforcement officer is investigating suspected operation of an aircraft while under the influence of alcohol or drugs.

d) **Duration of Pilot Certificates (61.19):**

Certificate	Expiration
Private Commercial ATP Ground Instructor	None
Student Pilot Certified Flight Instructor	24 Calendar Months

e) **Duration of Medical Certificates: (61.23)**

Certificate	Req'd Medical	Duration
Student Pilot	3 rd Class	If less than 40 years old on date of exam ▪ Expires the end of the last day of the 36 month after issuance If 40 yrs old or older on date of exam ▪ Expires the end of the last day of the 24 month after issuance
Recreational Pilot		
Private Pilot		
Flight Instructor		
Commercial Pilot	2 nd Class	When Used for privileges of Commercial Pilot ▪ Expires the end of the last day of the 12 month after issuance When Used for privileges of Private Pilot ▪ Same as for 3 rd class
Airline Transport Pilot	1 st Class	When Used for privileges of ATP ▪ Expires the end of the last day of the 6 month after issuance When Used for privileges of Commercial Pilot ▪ Same as for 2 nd class When Used for privileges of Private Pilot ▪ Same as for 3 rd Class
Glider/Balloon Pilots and ground instructors		
Student Pilot	None	N/A
Private Pilot		
Flight Instructor		
Ground Instructor		
Note - When acting as a required crewmember for any of the above situations , the medical applicable to that certificate is required for all pilot flight crewmembers		

f) **Replacement of Pilot Certificates, medical or knowledge test reports (61.29):**

- 1) A person may obtain a replacement (permanent) pilot certificate, medical or knowledge test report by written request to the FAA. (See Appendix of brief for forms)

(A) Replacement Pilot Certificate or Knowledge Test

Address:

Department of Transportation, FAA
Airman Certification Branch
P.O. Box 25082, Oklahoma City, OK 73125

(B) Replacement Medical

Address:

Department of Transportation, FAA
Aeromedical Certification Branch
P.O. Box 25082, Oklahoma City, OK 73125

- 2) A person may obtain a facsimile from the FAA, Airman Certification Branch of their pilot certificate, medical or knowledge test. (see appendix of brief for form)

(A) The Facsimile is valid for 60 days.

- 3) Interactive, electronic forms for all of the above can be obtained at:

<http://www.faa.gov/certification/People.htm>

g) **Additional Training, Authorization Requirements and Type Rating Requirements, (61.31):**

- 1) **Complex, High Performance, Pressurized** - To act as PIC a person is required to receive and log ground and flight training and obtain logbook endorsement of proficiency in each of the following airplanes (*refer to AC 61.9B, 61.98A & 61.107 for suggested training outlines*):

(A) *High Performance Airplane* - An airplane that has an engine of more than 200 HP.

(B) *Complex Airplane* - An airplane that has retractable landing gear, flaps, and a controllable pitch propeller.

(C) *Pressurized Airplane* - An airplane with a service ceiling or maximum operating altitude (which ever is lower) above 25,000 ft. MSL

- 2) **Tailwheel** - To act as PIC of a tailwheel airplane, a pilot must receive flight instruction and a logbook endorsement from an authorized instructor that includes

(A) Normal and crosswind Takeoffs & landings

(B) Wheel landings

(C) Go-arounds

- 3) **Turbojet** - To act as PIC of a turbojet powered airplane, a pilot must hold a type rating for that airplane.

h) **Knowledge Test: Prerequisites and Passing Grades (61.35):**

- 1) To be eligible (in part) to take an FAA knowledge test an applicant must show proof of satisfactory completion of the appropriate ground training or home study course.

i) **Knowledge Test: Cheating or unauthorized Conduct (61.37):**

- 1) A person who has cheated or committed any unauthorized act during a knowledge test may not take another knowledge test within 1 year, and any certificate held may be revoked.

j) **Prerequisites for practical tests (61.39):**

- 1) To be eligible for a practical test under FAR Part 612, an applicant is required to have passed the appropriate knowledge test within the preceding 24 calendar months.
- 2) A written statement from an authorized instructor certifying that the applicant has received the required training in preparation for a practical test must be dated within 60 days preceding the date of application.

k) **Practical Tests: General Procedures (61.43):**

- 1) If all increments of a practical test for a certificate or rating are not completed on the same date, all remaining increments must be satisfactorily completed no later than 60 days from the date of the test – otherwise the test must be repeated.

l) **Practical Tests: Required aircraft and equipment (61.45):**

- 1) One requirement for an aircraft furnished for the practical test is that it must have no prescribed operating limitations that prohibit its use in any of the required "AREAS OF OPERATION".

m) **Retesting after Failure (61.49):**

- 1) A person who fails a knowledge or practical test may immediately reapply for the test only after he has received:
 - (A) The necessary training and corresponding endorsement from an authorized instructor who has determined that the applicant is proficient to pass the test
- 2) A flight instructor applicant must demonstrate spins in an airplane or glider when the applicant is being retested for deficiencies in instructional proficiency on stall awareness or spins demonstrated during an initial practical test.
- 3) A flight instructor recommendation is not required for an ATP

n) **Pilot Logbooks (61.51).**

- 1) **General Requirements:** The only time required to be logged into the pilot logbook is:
 - (A) Training and aeronautical experience necessary to meet the requirements for a certificate or rating
 - (B) Aeronautical experience required for Recency or Currency requirements
- 2) **Solo Time** – A pilot log as Solo time only that time when the pilot is the sole occupant of the aircraft.
- 3) **Cross Country Time** :
 - (A) If used to acquiring Recreational, Private, Commercial or ATP certificate or instrument rating–
 - (a) Includes a landing at a point other than the point of departure
 - (b) Distance (straight line) must be more than **50 NM**
- 4) **Pilot time** – any Time that the person serves as a required crew member
- 5) **PIC Time** –

Logging PIC-Time	
Student Pilot	1) Must be sole occupant of the aircraft and working on a rating. 2) Acting as PIC of an airship on which more than one crew member is required under the regulations which the flight was flown
Recreational Private Commercial	1) Must be sole manipulator of the controls of an aircraft for which the pilot is rated 2) Acting as PIC of an aircraft on which more than one crew member is required under the regulations which the flight was flown. (i.e, your practical test you may log all as PIC)
ATP	All time while acting as PIC for operations requiring an ATP
CFI	All time while acting as an authorized instructor

- 6) **Instrument time** – that time that the person operates the aircraft solely by reference to instruments under actual or simulated conditions.

7) Carrying logbooks:

Certificate	When Logbook Must Be Carried
Recreational	1) All Solo flights a) Greater than 50 NM b) In B, C or D airspace c) Between sunset and sunrise d) Flying Aircraft for which no category or class rating is held
Student	All Solo X/C Flights
Private	Never
Commercial	

o) **Flight Review (61.56):**

- 1) Every 24 Calendar Months
- 2) A proficiency check for any certificate or rating substitutes for a flight review
- 3) Must include 1 hour ground training
- 4) Must include 1 hour flight training

p) **Recency Requirements (61.57)**

- 1) **Day VFR:**
 - (A) Cannot carry passengers unless within last 90 days:
 - (a) 3 takeoffs and 3 landings Category, Class and Type
 - (b) Landings to full-stop if performed in a tailwheel
- 2) **Night VFR:**
 - (A) Cannot carry passengers unless within last 90 days:
 - (a) 3 takeoffs and landings in same Category, Class and Type
 - (b) Between hours beginning 1 hr after sunset to 1 hr after sunrise
 - (c) Landings to full stop
- 3) **Instrument: ('66 HIT')**
 - (A) Cannot act as PIC unless within last 6 calendar months
 - (a) Perform 6 approaches in same Category, including:
 - (i) Intercepting/tracking
 - (ii) Holding

q) **Change of Address: 61.60**

- 1) A pilot must notify the FAA within 30 days of changing their permanent address in order to continue exercising the privileges of their rating. (See Appendix of Brief for form)

Address:

Department of Transportation, FAA
 Airman Certification Branch
 P.O. Box 25082, Oklahoma City, OK 73125

- 2) Interactive, electronic form for the above can be obtained at:
 - (A) <http://www.faa.gov/certification/People.htm>

r) Pilot Certifications and Ratings (61.various)

Certificate	Min Age	Experience Req'd for Rating	Limitations/privileges
Student 61 subpart C	16 yrs	N/A	Solo Operations May not carry passengers May not fly for compensation or hire May not fly for business May not act as required crew member unless properly rated May not fly when visibility less than 3 sm (day)/5 sm (night) May not fly when can not see the surface May not fly more than 25 NM from home airport unless endorsed May land only at home airport unless endorsed May not fly in class B airspace unless endorsed Must carry logbook on cross country flights
Private 61 subpart E	17 yrs	(40, 20, 10, 5, and five 3's) 40 hours Total time 20 hours Dual 10 hours Solo 5 hours Solo X/C including: 150 nm X/C with 1-segment at least 50 nm 3 hours dual X/C 3 hours Night including: 100 N.M. X/C and 10-takeoffs and landings to full stop 3 hours instrument 3 Takeoffs and Landings at Airport w/Tower 3 hours Prep for FAA.	May not fly for compensation of hire May not transport people or property for compensation or hire May fly for compensation if the flight is only incidental to a business May share cost of a flight
Commercial 61 Subpart F	18 yrs	(300, 3-100's, 250, 50, 20, 2-10's, 5 and 3) 300 NM Solo Cross Country, 1-250NM straight line dist., 100 Hrs PIC 100 NM, 2 hr Day Dual Cross Country (from orig. departure pt.) 100 NM, 2 hr Night Dual Cross Country (from orig. departure pt.) 250 Hrs Total Time 50 Hrs cross country flight 20 Hrs Dual Training 10 Hrs Instrument Training 10 Hrs Solo Flight 5 Hrs Night VFR 3 Hrs FAA prep	May fly for compensation or hire May transport people or property for compensation or hire May not carry passengers > 50 NM unless instrument rated. May not carry passengers at night unless instrument rated
Instrument 61.65	At least Private Pilot's Cert.	(50, 40, 15, 3, 1) 50 hrs cross-country flight time PIC, at least 10 hours in airplanes 40 hrs actual/simulated instrument time 15 hrs instrument flight training 3 hrs instrument training prep for practical test w/in 60 days 1 XC flight performed under IFR, consisting of - 250 nautical miles along airways or ATC-directed routing; An instrument approach at each airport; and 3 different kinds of approaches Max 30 hrs flight simulator or flight training device Part 142 Max 20 hrs flight simulator or flight training device not Part 142	May fly in weather less than basic VFR. May file and accept an IFR clearance from ATC May enter Class A airspace with ATC clearance

3) 14 CFR Part 91: General Operating and Flight Rules:

4) PIC Responsibility and authority (91.3):

- a) The PIC is responsible for the aircraft
- b) The PIC has final authority as to the operation of the aircraft
- c) The PIC may deviate from any FAA rule in an emergency

5) Airworthiness (91.7)

- a) No person may operate an aircraft unless it is airworthy
- b) The PIC is responsible for determining if an aircraft is airworthy

6) Dropping Objects (91.15)

- a) The PIC may not allow an object to be dropped if it creates a hazard to persons or property.

7) Alcohol or Drugs (91.17)

- a) No person may act as a crewmember of an aircraft
 - 1) Within 8 hrs after the consumption of alcohol
 - 2) With a blood alcohol level of 0.04 or greater
 - 3) While under the influence of alcohol
 - 4) While under the influence of any drug that affects the persons faculties in a way contrary to safety.

8) Preflight Action (91.103)

- a) For flights not in vicinity of an airport (NW KRAFT)
 - 1) Notams
 - 2) Weather briefing
 - 3) Known traffic delays
 - 4) Runway lengths of intended use
 - 5) Alternates if the planned flight cannot be completed
 - 6) Fuel requirements
 - 7) Take off and Landing distance requirements

9) Use of Safety Belts and Shoulder Harnesses (91.105 and 91.107)

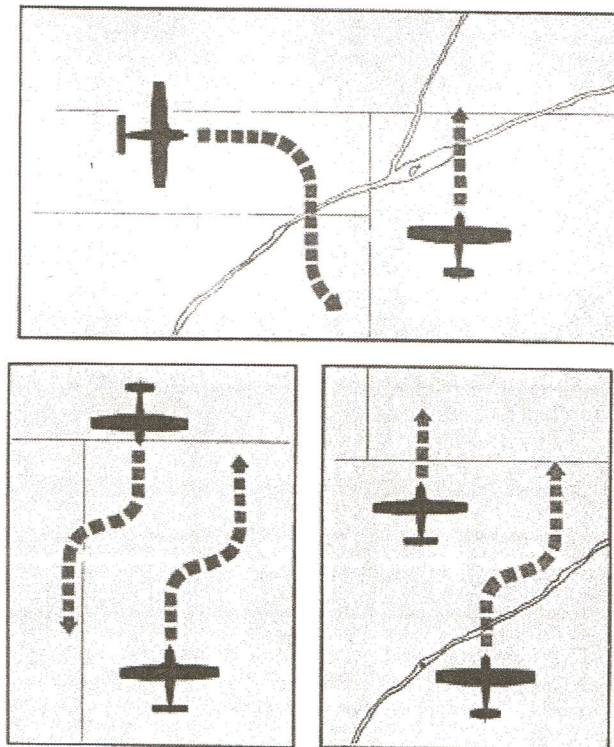
- a) Crewmembers (91.105)
 - 1) Must wear seat belt - When at crew-member station
 - 2) Must wear Shoulder Harness - During Takeoff and landing
- b) Passengers (91.107)
 - 1) PIC must ensure passengers are briefed on proper use of seat belts and shoulder harnesses
 - 2) Must wear Seat belt and shoulder harness - During movement on the surface, takeoff and landing

10) Simulated flight conditions (IFR training in VFR conditions) (91.109)

- a) No person may operate an aircraft in simulated instrument conditions unless the safety pilot has at least a private pilot certificate with appropriate category and class ratings.

11) Right of way rules (91.113)

- a) Distress – An aircraft in distress has the right of way over all other aircraft
- b) Head-on – Each aircraft shall alter their course to the right.
- c) Converging – Unpowered, least maneuverable to most maneuverable
 - 1) Right of way order
 - (A) Balloon – right of way over all other aircraft
 - (B) Glider – has right of way over airship (blimp)
 - (C) Glider towing – has right of way over all other powered aircraft
 - (D) Airship – has right of way over airplane/helicopter
 - (E) Airplane/helicopter
- d) Overtaking – The aircraft being overtaken has the right of way. “Passing” pilot alters course right
- e) Landing – The lower aircraft has the right of way over the higher aircraft.

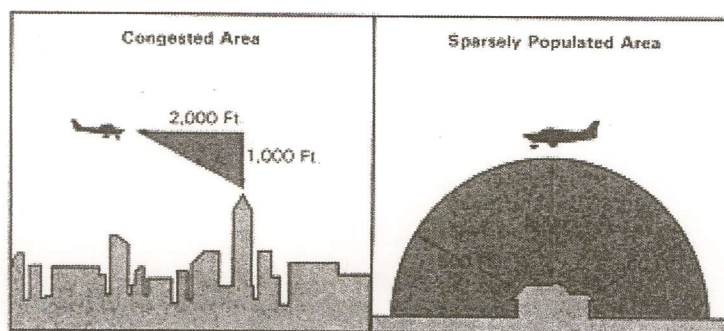


12) Aircraft speed (91.117)

- a) 250 kts - Below 10,000 msl
- b) 200 kts - At or below 2500 agl and within 4 nm of a class D or C
- c) 200 kts - in a VFR corridor through class B airspace
- d) 200 kts in airspace underlying class B

13) Minimum Safe Altitudes (91.119)

- a) General (anywhere) - an altitude that will allow an emergency landing without undue hazard to persons or property on the surface.
- b) Sparsely Populated areas
 - 1) At least 500 ft from any person, vessel, vehicle or structure
- c) Congested Areas
 - 1) At least 1000 feet above the highest obstacle within a horizontal radius of 2000 feet.



14) Compliance with ATC Clearances (91.123)

- a) Any pilot given priority by ATC in an emergency shall , upon request, submit a detailed report within 48 hours to the manager of the ATC facility at which the deviation occurred

15) VFR Fuel Requirements (91.151)

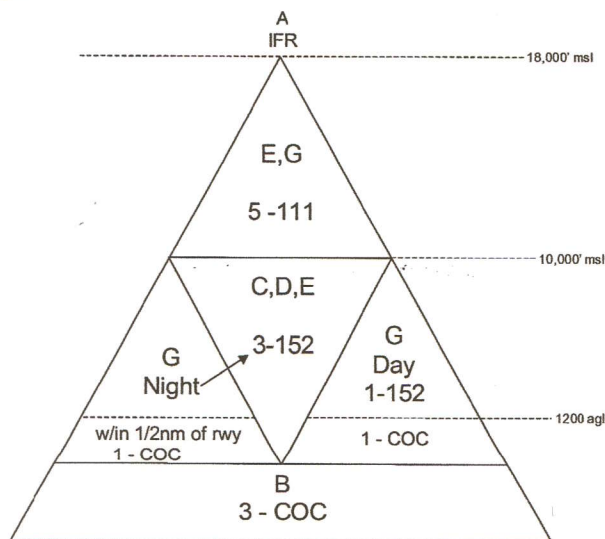
- a) VFR
 1) Day – Enough fuel to the first place of intended landing and then for 30 minutes at normal cruising speed
 2) Night– Enough fuel to the first place of intended landing and then for 45 minutes at normal cruising speed

16) ATC Light Signals (91.125)

Color and type of signal	Meaning with respect to aircraft on the surface	Meaning with respect to aircraft in flight
Steady green	Cleared for takeoff	Cleared to land
Flashing green	Cleared to taxi	Return for landing (to be followed by steady green at proper time)
Steady red	Stop	Give way to other aircraft and continue circling
Flashing red	Taxi clear of runway in use	Airport unsafe - do not land
Flashing white	Return to starting point on airport	Not applicable
Alternating red and green	Exercise extreme caution	Exercise extreme caution

17) VFR Weather Minimums (91.155)

- a) Weather minimum Triangle



Basic VFR Weather Minimums

- b) Operating in the traffic pattern of B, C, D or E airports
 1) Ceiling: 1000 agl or greater
 2) Visibility: 3 sm

18) VFR Cruising Altitudes above 3000 AGL (91.159)

- a) From 0° through 179° (magnetic course):
 1) Odd thousands of feet – plus 500 (i.e., for course of 090°, 3500, 5500, 7500, etc)
 (A) Memory aid: “Easterners are odd”
 b) From 180° through 359° (magnetic course):
 1) Even thousands of feet – plus 500 (i.e., for course of 090°, 4500, 6500, 8500, etc)

19) Special VFR (91.157)

- a) Allows operating within B, C, D or E airports when ceiling and visibility are below VFR minimums

- b) Prohibited at night unless instrument rating is held, pilot current and aircraft equipped for IFR
- c) Is a clearance and must be granted by ATC
- d) Visibility Req's: 1 statute mile ground visibility
- e) Cloud Req's: Clear of clouds
 - 1) *Flight visibility: visibility from the cockpit when in the takeoff position*

20) IFR Fuel Requirements (91.167)

- a) Enough fuel to the first place of intended landing; and
- b) From that airport to the alternate airport; and
- c) Then for an additional 45 minutes at normal cruising speed

21) Alternate Requirements for IFR (91.167)

- a) Required to file an alternate when:
 - 1) The airport of intended landing doesn't have an instrument approach procedure.
 - 2) 1, 2, 3 rule: When the weather at the airport of intended landing:
 - (A) from 1 hour before to 1 hour after the ETA
 - (B) Forecast to be less than 2000 foot ceiling; or
 - (C) Forecast to be less than 3 sm visibility.

22) VOR Equipment check for IFR Operations (91.171)

- a) VOR equipment must be checked every 90 days for accuracy (order best to worst)
 - 1) Bench Test $\pm 4^\circ$
 - 2) VOT (180 "To") $\pm 4^\circ$
 - 3) Ground VOR $\pm 4^\circ$
 - 4) Published Airborne $\pm 6^\circ$
 - 5) Made up Airborne $\pm 6^\circ$
 - 6) Dual VOR $\pm 4^\circ$

23) Takeoff and landing under IFR(91.175)

- a) Takeoff minimums – 0/0
- b) Landing Minimums
 - 1) Authorized DH or MDA - Highest of the following:
 - (A) Approach procedure
 - (B) Prescribed for the pilot in command
 - (C) For which the aircraft is equipped
- c) Operation below DH or MDA
 - 1) Continuously in a position from which a descent to landing on the intended runway can be made
 - 2) At normal rate of descent.
 - 3) Using normal maneuvers.
 - 4) Flight visibility prescribed in IAP
 - 5) At least one of following:
 - (A) Approach light system (if no other indicator can be seen you can only descend to TDZ +100 ft)
 - (B) Threshold or Threshold markings
 - (C) Threshold lights
 - (D) REIL (runway end identifier lights)
 - (E) VASI (Visual approach slope indicator)
 - (F) Touchdown zone or touchdown zone markings
 - (G) Touchdown zone lights
 - (H) Runway or runway markings
 - (I) Runway lights
- d) Missed Approach procedures
 - 1) Any time the runway environment is not visible
 - (A) Upon arrival at the missed approach point, or
 - (B) At the DH; or
 - (C) During a circling maneuver at or above MDA; or
 - (D) Any time below MDA; and

(E) thereafter until touchdown

24) Minimum altitudes for IFR Operations (91.177)

- a) Minimum altitudes prescribed for instrument approach procedures; or enroute chart
- b) Mountainous areas - 2000 ft above highest obstacle within 4 NM
- c) Non-mountainous areas - 1000 ft above highest obstacle within 4 NM

25) IFR cruising altitudes (91.179)

- a) Controlled airspace – Altitude assigned by ATC
- b) Uncontrolled Airspace (below 18000)
 - 1) **From 0° through 179° (magnetic course):**
 - (A) Odd thousands of feet – (i.e., for course of 090°, 300, 5000, 7000, etc)
 - (B) Memory aid: “Easterners are odd”
 - 2) **From 180° through 359° (magnetic course):**
 - (A) Even thousands of feet – (i.e., for course of 090°, 4000, 6000, 8000, etc)
- c) Uncontrolled Airspace (above 18000) - see regulations

26) IFR operations 2-way communication failure (91.185)

- a) When in VFR – Remain in VFR and land as soon as practicable
- b) When in IFR –
 - 1) Route (“**AVE-F**”)
 - (A) Assigned
 - (B) Vectored
 - (C) Expected (in further clearance)
 - (D) Filed
 - 2) Altitude (“**MEA**”)
 - (A) Highest of the following
 - (a) Minimum altitude approved for IFR operations
 - (b) Expected (in further clearance)
 - (c) Assigned

27) Civil Aircraft Certifications Required(91.203) A R R O W

27) Airworthiness Equipment and instrument requirements (91.205):

- a) Day VFR (Memory Aid: “A TOMATOE FLAMES”)
 - 1) Airspeed Indicator
 - 2) Tachometer
 - 3) Oil Pressure Gauge
 - 4) Magnetic Compass
 - 5) Altimeter
 - 6) Temperature Gauge (each liquid cooled engine)
 - 7) Oil temp gauge
 - 8) Emergency equipment (for hire, over water beyond power off glide from shore)
 - 9) Fuel Gauge
 - 10) Landing gear position indicator (if retractable)
 - 11) Anti-collision light (if certificated after March 1996)
 - 12) Manifold pressure gauge (each altitude engine)
 - 13) Elt (if req'd by 91.207)
 - 14) Seat Belts & shoulder harness (certificated after July 1988)
- b) Night VFR
 - 1) All of the Day VFR equipment plus -
 - 2) Memory aid: “FLAPS”
 - (A) Fuses (3 of each or 1 complete set)
 - (B) Landing light (if for hire)
 - (C) Anticollision light
 - (D) Position lights (“red/green: “Red - right – returning”)

(E) Source of power

c) IFR

- 1) All of the day and night equipment plus -
- 2) Memory Aid: "GRAB CARD"
 - (A) Generator
 - (B) Rate of turn indicator
 - (C) Attitude indicator
 - (D) Ball
 - (E) Clock with 2nd hand
 - (F) Altimeter (sensitive, adjustable to barometric pressure)
 - (G) Radios
 - (H) Directional Gyro
 - (I) Dme if abv FL240

28) ELT's (91.207)

a) **Must be installed and operational** for airworthiness

1) Exceptions:

- (A) Ferrying an airplane w/inop. ELT for repair or ELT install
- (B) Flying aircraft while ELT is removed for repair (90 days max)
- (C) Single person aircraft (certificated for pilot only)
- (D) Crop Dusting operations
- (E) Flight training Operations within 50 NM of home airport
- (F) Aircraft design/testing operations

b) **Must be inspected:**

- 1) every 12 calendar months

c) **Must be replaced after:**

- 1) 1-hour cumulative use
- 2) 50% of useful battery life has expired

d) **May be tested:**

- 1) First 5 minutes after the hour **or** w/concurrence of nearest ATC facility
- 2) Only while on the ground
- 3) Tune to 121.5 on COMM

29) Aircraft lights (91.209)

a) No one may operate an aircraft between sunrise and sunset unless it has lighted position lights.

b) No one may park or move an aircraft in dangerous proximity to a night operations area between sunrise and sunset unless

- 1) it has lighted position lights; or
- 2) It is clearly illuminated; or
- 3) It is an area marked by obstruction lights

30) Supplemental Oxygen (91.211)

a) Unpressurized Cabins (Rules apply to the following cabin pressure altitudes):

- 1) Between 12,500 and 14,000 MSL - Oxygen is required by each flight crewmember when flight duration is greater than 30 minutes.
- 2) Above 14,000 MSL - Oxygen must be used continuously by each flight crewmember
- 3) Above 15,000 MSL - Oxygen must be provided to each passenger

b) Pressurized Cabins:

- 1) Above 25,000 - A 10 min. supply of oxygen for each occupant
- 2) Above 35,000 - One pilot continuously use oxygen unless equipped w/quick donning mask (5 sec)
- 3) Above 41,000 - One pilot must continuously use oxygen

31) Inoperative Equipment (91.213)

a) No person may take off an aircraft with inoperative equipment unless:

1) The aircraft has within it an approved Minimum Equipment List and LOA

or

2) For small, non-turbine powered aircraft

(A) The equipment is not part of the VFR-day type certification instruments/equip for which aircraft was certificated

(B) The equipment is not required by 91.205 (day/night VFR req's)

(C) Not required by an AD

(D) Not required under the aircraft's equipment list

(E) The inoperative equipment are removed/deactivated, placarded as "inoperative"

or

3) A special flight permit has been issued by the FSDO having jurisdiction over the flight operation

A special flight permit may be issued for an aircraft that may not currently meet applicable airworthiness requirements but is capable of safe flight, for the following purposes:

(1) *Flying the aircraft to a base where repairs, alterations, or maintenance are to be performed, or to a point of storage.*

(2) *Delivering or exporting the aircraft*

(3) *Production flight testing new production aircraft.*

(4) *Evacuating aircraft from areas of impending danger.*

(5) *Conducting customer demonstration flights in new production aircraft that have satisfactorily completed production flight tests.*

(b) *A special flight permit may also be issued to authorize the operation of an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available.*

§ 21.199 Issue of special flight permits.

Except as provided in § 21.197(c), an applicant for a special flight permit must submit a statement in a form and manner prescribed by the Administrator, indicating :

(1) *The purpose of the flight.*

(2) *The proposed itinerary.*

(3) *The crew required to operate the aircraft and its equipment, e.g., pilot, copilot, navigator, etc.*

(4) *The ways, if any, in which the aircraft does not comply with the applicable airworthiness requirements.*

(5) *Any restriction the applicant considers necessary for safe operation of the aircraft.*

(6) *Any other information considered necessary by the Administrator for the purpose of prescribing operating limitations.*

(b) *The Administrator may make, or require the applicant to make appropriate inspections or tests necessary for safety.*

32) Transponder Use (91.215)

a) Aircraft must operate transponder (if equipped) at all times, while in controlled airspace.

b) All aircraft must have/operate their transponder:

1) Above 10,000 MSL and 2500 AGL

2) 30 NM from a "Class B" from surface to 10,000

3) Inside and above a Class B

4) Inside and above a class C

c) Exceptions & Deviations

1) Aircraft with inoperative mode C may request ATC deviation from 91.215 at any time

2) Aircraft w/o electrical system may submit request for deviation from 91.215 to the ATC facility having jurisdiction at least 1-hour prior to proposed operation

3) Balloons, gliders, and Aircraft not originally certificated w/electrical systems may operate within 30 NM Veil and/or Under ceiling of B & C as long as they remain below 10,000 MSL without requesting a deviation.

33) Parachute Operations (91.307)

a) Unless each occupant of the aircraft is wearing a parachute, no person may execute an intentional maneuver that exceeds:

1) 60° degrees of bank; or

2) 30° nose up

b) Exceptions/deviations

- 1) Spin training and other maneuvers required for a certificate or rating when given by CFI or ATP

34) Towing Gliders (91.309)

a) Glider towing: Experience and training requirements. (61.69)

1) Initial Requirements:

(A) No person may act as pilot in command for towing a glider unless that person:

- (a) Holds at least a private pilot certificate; and
- (b) Has logged at least 100 hours of pilot-in-command time in the aircraft category, class, and type used to tow the glider;
- (c) Has a logbook endorsement from an authorized instructor who certifies that the person has received ground and flight training in gliders
- (d) has logged at least three flights as the sole manipulator of the controls of an aircraft towing a glider or simulating glider-towing flight procedures while accompanied by a pilot who meets the requirements of this section;
- (e) has received a logbook endorsement from a pilot who meets the requirements of this section, that the person has accomplished at least 3 flights in an aircraft while towing a glider

2) Recency Requirements:

(A) Within the preceding 12 months has:

- (a) Made at least three glider tows while accompanied by a qualified pilot who meets the requirements of this section; or
- (b) Made at least three flights as pilot in command of a glider towed by an aircraft.

35) Restricted, Limited, and Experimental Category aircraft (91.313, 91.315 & 91.319)

- a) No person may carry persons or property for hire in a restricted, limited or experimental category aircraft.

36) Operation after maintenance and alterations (91.407)

- a) No person may carry passengers in an aircraft that has been maintained, rebuilt or altered in a manner that may have appreciably affected its flight characteristics until an appropriately rated pilot (with at least a private pilot's license) flies the aircraft and makes an entry documenting that flight in the maintenance logs.

37) Inspections (91.409 through 91.413)

a) Memory Aid: "AVIATES"

1) AD's	(Upon Issuance)	39.3
2) VOR	(every 30 days, IFR)	91.171
3) Inspections	(Annual, 100 hr, progressive)	91.409
4) Altimeter	(Every 24 calendar months, IFR)	91.411
5) Transponder	(Every 24 calendar months, controlled airspace)	91.413
6) Elt	(Every 12 calendar months)	91.207
7) Static System	(Every 24 calendar months, IFR)	91.411

b) Annual

- 1) Required for all aircraft (except those using progressive inspection)
- 2) Must be completed within preceding 12 calendar months prior to flight
- 3) May be Substituted for 100 hr inspection

c) 100 hour

- 1) Required for all aircraft used for flight training (when the aircraft is provided by the instructor)
- 2) Required when transporting passengers for hire
- 3) Must be completed within preceding 100 hours prior to flight
- 4) May be exceeded by max 10 hours but those hours must be taken off next 100 hr block

d) Progressive –

- 1) Substitutes for both the annual and 100hr inspections when conducted according to approved inspection schedules and procedures
- 2) Must be approved by FSDO

- e) AD's - No person may operate a product to which an airworthiness directive applies except in accordance with the requirements of that airworthiness directive.

f) **NSTB Part 830: Accident and Incident Notification:**

g) **Definitions**

1) **Death:**

(A) Any injury which results in death within 30 days of the accident

2) **Serious Injury :**

(A) any injury which:

(a) Requires hospitalization for more than 48 hours (starting 7-days from accident)

(b) Results in a fracture of any bone (except simple fractures of fingers, toes, or nose)

(c) Causes severe hemorrhages, nerve, muscle, or tendon damage

(d) Involves any internal organ

(e) Involves second or third degree burns, or any burns affecting more than 5 percent of the body surface

3) **Substantial damage:**

(A) Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component.

(a) Not Considered Substantial Damage:

(i) Engine failure or damage limited to an engine if only one engine fails or is damaged

(ii) Bent fairings or cowling, dented skin

(iii) Small punctured holes in the skin or fabric

(iv) Ground damage to rotor or propeller blades

(v) Damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips

4) **Incident :**

(A) An occurrence other than an accident

(B) Associated with the operation of an aircraft

(C) Which affects or could affect the safety of operations

5) **Accident:**

(A) An occurrence associated with the operation of an aircraft

(B) That takes place between the time any person boards the aircraft with intention of flight and the time all such persons have disembarked; and

(C) In which any person suffers death or serious injury; or

(D) In which the aircraft receives "Substantial Damage"

6) **Notifications (NTSB 830):**

(A) Immediate notification. - The operator of an aircraft involved in an accident or the following incidents shall immediately, and by the most expeditious means available, notify the nearest National Transportation Safety Board field office.

(a) Flight control system malfunction or failure.

(b) Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness.

(c) Failure of structural components of a turbine engine excluding compressor and turbine blades and vanes.

(d) In-flight fire.

(e) Aircraft collide in flight.

(f) Damage to property, other than the aircraft, estimated to exceed \$25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

(g) For large multiengine aircraft (more than 12,500 pounds maximum takeoff weight).

(i) In-flight failure of electrical systems which requires the sustained use of an emergency bus powered by a backup source such as a battery, auxiliary power unit, or air driven generator to retain flight control or essential instruments;

(ii) In-flight failure of hydraulic systems that results in sustained reliance on the sole remaining hydraulic or mechanical system for movement of flight control surfaces;

(iii) Sustained loss of the power or thrust produced by two or more engines; and

(iv) An evacuation of an aircraft in which an emergency egress system is utilized.

(v) An aircraft is overdue and is believed to have been involved in an accident.

(B) Reports and statements to be filed.

- (a) Within 10 days after an accident
- (b) Within 7 days if an overdue aircraft is still missing.
- (c) A report on an incident for which immediate notification is required shall be filed only as requested by an authorized representative of the NTSB.

38) FAA Advisory Circulars (AC 00-2.13 - ADVISORY CIRCULAR CHECKLIST)

- a) The FAA issues advisory circulars to inform the aviation public in a systematic way of non-regulatory material.
- b) Unless incorporated into a regulation by reference, the contents of an advisory circular are not binding on the public.
- c) Advisory circulars are issued in a numbered-subject system corresponding to the subject areas of the Federal Aviation Regulations (FARs) (Title 14, Code of Federal Regulations, Chapter I, Federal Aviation Administration).
- d) An AC is issued to provide guidance and information in a designated subject area or to show a method acceptable to the Administrator for complying with a Federal Aviation Regulation.

39) AIM: Aeronautical Information Manual:

- a) Non-regulatory but may contain regulatory information
- b) The Aeronautical Information Manual (AIM) is designed to provide the aviation community with basic flight information and ATC procedures for use in the National Airspace System (NAS) of the United States
- c) AIM contains:
 - 1) Fundamentals required in order to fly in the United States NAS.
 - 2) Items of interest to pilots concerning health and medical facts
 - 3) Factors affecting flight safety,
 - 4) A pilot/controller glossary of terms used in the ATC System,
 - 5) Information on safety, accident, and hazard reporting
 - 6) Chapters:
 - (A) Chapter 1 - Navigation Aids
 - (B) Chapter 2 - Aeronautical Lighting and other visual aids
 - (C) Chapter 3 - Airspace
 - (D) Chapter 4 - ATC
 - (E) Chapter 5 - Air Traffic Procedures
 - (F) Chapter 6 - Emergency Procedures
 - (G) Chapter 7 - Safety of Flight
 - (H) Chapter 8 - Medical Facts for Pilots
 - (I) Chapter 9 - Aeronautical charts and related publications