Airspace / Operations	**Class A (Regulatory)**	**Class B (Regulatory)**	**Class C (Regulatory)**	**Class D (Regulatory)**	**Class E (Regulatory)**	**Class G** **(not specified)**
Controlled or Uncontrolled?	Controlled	(Busy..O'Hare) Controlled: ATC must say "cleared to enter class B"	(Madison) -Moderate Traffic -Controlled, Tower -Radar Controlled	(Janesville) -Controlled, Tower -Radar uncommon	(Everywhere else) -Controlled by pilots via CTAF -No ATC, CTAF	(Ground) -Uncontrolled - No ATC -Under class E
Dimensions	FL180 to FL600 (18,000' – 60,000; MSL)	Surface to 10,000' MSL (Upside down wedding cake)	Surface to 4000' AGL *2 rings: 5nm: sfc-4000' & 10nm: 1200'-4000' AGL	-One ring: 4.3nm radius extending up to 2500' AGL	-Officially 14,500' MSL and up to floor of Class A = 17,999'MSL -East of Mississippi = 1200'AGL (this entire region is under a blue shading)	Below class E airspace
Sectional Chart Description	Not Depicted	Solid blue rings on sectional charts	Solid magenta rings on sectional -2 rings	One dashed Blue ring 4.3 nm	-No depiction = E begins 14,500'MSL -Blue shade = E starts at 1200' AGL -Magenta shade = E starts at 700' AGL -Dashed line = E starts at surface -Always extends to Class A floor, 17,999'MSL	N/A
Pilot Qualifications	Must be instrument-rated	Private pilot or student with instructor endorsement	Student and Higher	Student and Higher	Student and Higher	Student and Higher
Entry & Aircraft Requirements	IFR only	VFR & IFR -2 way radios -Operable mode C 4096 transponder w/i 30nm of airport	-2 way radios -Mode C 4096 -Must hear tail # to enter	-2 way radios -Establish contact w/tower before entering	-N/A	-N/A

FAR Part 61: Certification of Pilots & Instructors

http://www.ecfr.gov/cgi-bin/text-idx?SID=3a03e28ea8b75584890d9d151937a20f&node=pt14.2.61&rgn=div5

Required Documents (FAR 61.3)

1. Pilot's certificate
2. Photo ID
3. Medical

Exams

1. FAA Knowledge Exam (FAR 61.35) – Valid for 2 years
2. FAA Practical Exam (FAR 61.39) – Must receive preparatory flight training within 60 days

Certificates (FAR 61.5)

1. Student
2. Recreation/Sport
3. Private
4. Commercial
5. ATP

Age Requirements

1. Student: 16 years old (14 for glider/balloon)
2. Private: 17 years old
3. Commercial: 18 years old
4. CFI: 18 years old
5. ATP: 23 years old

Ratings (FAR 61.5)

1. Instrument Rating
2. Multi-Engine Rating
3. Instructor Ratings

Offenses/Refusals Regarding Drug Testing (FAR 61.14-61.16)

Revocation/suspension of certificate

Denial of applications for up to 1 year

Temporary Certificate (FAR 61.17)

Valid for 120 days

Expires:

1. Expiration date listed on certificate
2. Receipt of permanent certificate
3. Notifications of denial of certificate or revocation

Security Disqualification (FAR 61.18)

TSA can revoke your certificate if you "pose a security threat"

Duration of Pilot Certificates (FAR 61.19)

Student: 24 months

Pilot: no expiration date (must meet currency regulations listed below)

CFI: 24 months

Ground instructor: none

Surrendered, suspended, or revoked certificates: certificate is not effective

Medical Certificates (FAR 61.23)

1st Class: ATP

2nd Class: commercial

3rd Class: Private, Recreational, Student, CFI

Not Needed:

1. Student pilot: sport or glider
2. Pilot: glider or balloon
3. Sport: glider or balloon
4. CFI
    a. Sport pilot in a glider/balloon
    b. Glider
    c. Anywhere else, if not acting as PIC
5. Ground instructor
6. Examiner/check airman during a test in a FTD/Simulator
7. Taking a test/check for a certificate/rating in a FTD/Simulator

Duration

First: 12 calendar months if you are under 40 (if over 40, duration = 6 months)

Second: 12 calendar months

Third: 5 years if under 40 (if over 40, duration = 24 months)

Name Change (FAR 61.25): current certificate; copy of marriage license/court order

Voluntary Surrender of Certificate (FAR 61.27)

1. Cancellation
2. Issuance of lower grade certificate
3. Issuance of another certificate with ratings deleted

Lost/Destroyed Certificate (FAR 61.29)

Fax copy obtained from the FAA is valid for 60 days

-pilot certificate, medical, or airman knowledge test report

Pilot Logbooks (FAR 61.51)

Must document-

1. Training and aeronautical experience for a certificate/rating/flight review
2. Experience to meet recency of flight requirements

Entries must include-

1. Date
2. Time
3. Location departed/arrived
4. Conditions: day/night/actual/SI
5. Type and identification of aircraft
6. Name of safety pilot (if appropriate)
7. Type of experience: solo/PIC/SIC/dual/simulated

Solo: pilot is sole occupant of aircraft

PIC-

1. Sole manipulator of the controls- pilot is rated/has privileges in aircraft
2. Sole occupant of aircraft
3. PIC when more than one pilot is required
4. Authorized instructor always acts as PIC

Flight Review (FAR 61.56): 1 hour of flight and 1 hour of ground- 24 months

If the pilot is a current flight instructor, then only the 1.0 flight is required

Recent Flight Experience (FAR 61.57): Pilot in Command Privileges

Day: every 90 days, 3 landings

-same category, class and type of aircraft

-tailwheel (landings must be made to a full stop)

Night: every 90 days, 3 full-stop landings

-1 hour after sunset to 1 hour before sunrise

Change of Address (FAR 61.60): notify FAA within 30 days (Online Account: https://amsrvs.registry.faa.gov/amsrvs/ReqAcct.asp)

Subpart C – Student Pilots

Student Pilot Restrictions (FARs 61.81-61.95)

No passengers

Not for compensations/hire

Not for business

Visibility must be 3sm (5sm at night)

Flight cannot be made without visual reference to the surface

Certificate valid for 24 months

Subpart E – Private Pilots - FARs 61.102-61.117 list all of the training requirements, privileges and limitations of private pilots

Certification of Airmen vs. Certification of Aircraft

	Category	Class
Airmen	Airplane Glider Rotorcraft Lighter-than-air	Single Engine Land Multi Engine Land Single Engine Water Multi Engine Water Gyroplane Helicopter Airship Free Balloon
Aircraft	Normal Utility Transport Acrobatic Limited Restricted Provisional	Airplane Rotorcraft Glider Balloon Landplane Seaplane

Airmen Certifications

Aircraft Category	Airplane Class	Rotorcraft class	Instrument	Sport Pilot
Airplane Rotorcraft Glider Powered-lift	Single engine Multiengine	Helicopter Gyroplane	Airplane Helicopter Powered-lift	

Examples of Airmen Certification

Private Pilot Airplane Single Engine Land; Airplane Single Engine Sea; Rotorcraft-Helicopter

Commercial Pilot Airplane Single and Multiengine Land; Instrument Airplane

Certified Ground Instructor, Advanced Ground Instructor, Instrument Ground Instructor

Certified Flight Instructor: Rotorcraft- Helicopter

Certified Flight Instructor: Airplane Single Engine, Instrument- Airplane

Aircraft Classifications and Ratings

Category	Airplane	Rotorcraft	Glider	Lighter-than-air	Powered-lift	Powered Parachute	Weight-shift-control
Class	Single Engine Land Multiengine Land Single Engine Sea Multiengine Sea	Helicopter Gyroplane		Airship Balloon		PP Land PP Sea	WSC Land WSC Sea
Ratings	Instrument	Helicopter-instrument			Instrument		

FAR Part 91: General Operating and Flight Rules

http://www.ecfr.gov/cgi-bin/text-idx?node=14:2.0.1.3.10

Subpart A

Pilot in Command (FAR 91.3)

- Responsible for flight
- Final authority for flight
- Emergency action: may deviate from FARs as necessary
- Responsible for determining airworthiness (FAR 91.7)
- May not operate aircraft unless it is in an airworthy condition (FAR 91.7)

Operating Limitations (FAR 91.9)

- Must comply with placards and marking
- POH must be accessible in aircraft
- No threatening, intimidating or interfering with crewmembers (FAR 91.11)
- No careless or reckless operations (FAR 91.13)

Dropping Objects (FAR 91.15):

- Take precautions not to injure people/property

Alcohol/Drugs (FAR 91.17)

- 8 hours bottle to throttle
- Can’t be under the influence- include hangovers
- Blood alcohol level .04 or less

Can't be under the influence of illegal drugs

Can't carry intoxicated passengers (except in emergency) or illegal drugs (FAR 91.19) on airplanes

Portable Electronics (FAR 91.21):

PIC may allow if they do not interfere with systems

Subpart B

Preflight Action (FAR 91.103)- for flights not in the vicinity of an airport pilots must familiarize themselves with:

1. Weather reports and forecasts
2. Fuel requirements
3. Alternatives
4. Known ATC traffic delays

All flights: runway lengths and takeoff/landing distances

Seat Belts (FAR 91.107)

Crewmembers: shoulder harness takeoff/landing; lap belt all phases of flight

Passengers: taxi, takeoff, landing

Children younger than 2: may be held in an adult's lap

Parachuters: may sit on the floor w/lap belts

Safety seats: must be approved for use in aircraft (placarded)

Formation Flight (FAR 91.111)

Cannot create a collision hazard

All PIC make prior arrangements

Cannot carry passengers for hire in formation

Right of Way (FAR 91.113)

Distress → Balloon → Glider → Airship → Powered Parachute → Aircraft

Head on: each alter course to the right

Overtaking: aircraft being overtaken has the right of way

Landings: aircraft on final has the right of way; aircraft at lower altitude has right of way

Aircraft refueling or towering have right of way over engine driven aircraft (incl. airships)

Aircraft speed (FAR 91.117)

10,000' and below: 250 kts

2,500' and 4 miles of Class C or D airport: 200 kts

VFR corridor or underneath shelf of class B: 200 kts

If the minimum safe speed of your airplane is higher, you can operate at that speed

Minimum Safe Altitudes (FAR 91.119)

Anywhere: allow for a safe emergency landing

Congested: 1,000' AGL above the highest obstacle within 2,000' of the aircraft

Other than congested: 500 AGL

Altimeter Settings (FAR 91.121)

Must be set to current report within 100 nm of aircraft

No radio- elevation of departure airport

At or above FL180 (18,000 ft MSL) set to 29.92" Hg

Compliance with ATC (FAR 91.123)

Can't deviate from a clearance unless:

1. Emergency exists
2. Response to a TCAS alert

Notify ATC ASAP

If requested, submit a report within 48 hours

ATC Light Signals (FAR 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.

Restricted and Prohibited Areas (FAR 91.133)

No person may operate an aircraft within a restricted area or prohibited area unless they have the permission of the controlling agency

Temporary Flight Restrictions in the Vicinity of Disaster/Hazard Areas (FAR 91.137)

No one may operate an aircraft within an area designated as a TFR by NOTAM unless approved to do so as specified in FAR 91.137

Airspace	Flight visibility	Distance from clouds

High Barometric Pressure Conditions (FAR 91.144)

NOTAM will be published if pressure exceeds/will exceed 31.00” Hg

No one may operate an aircraft or initiate flight if the pressure exceeds 31.00” Hg without a waiver issued by the administrator

Fuel Requirements: VFR (FAR 91.151)

Fly to destination +30 minutes at normal cruise

Night: destinations +45 minutes at normal cruise

VFR Flight Plan: Information Required (FAR 91,153)

A VFR flight plan must include:

Aircraft identification number

Type of aircraft

Full name and address of PIC

Point and time of departure

Proposed route, cruising altitude, true airspeed

The first point of intended landing and time enroute

The amount of fuel onboard in flight hours

Number of people onboard

Notify an FAA FSS or ATC facility to cancel flight plan upon completion

Basic VFR Weather Minimums (FAR 91.155)

No one may operate an aircraft under VFR if the visibility or cloud clearance is less than what is in this table:

Class A	Not Applicable	Not Applicable.

Class B	3 statute miles	Clear of Clouds.
Class C	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class D	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class E:		
Less than 10,000 feet MSL	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal
At or above 10,000 feet MSL	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.
Class G:		
1,200 feet or less above the surface (regardless of MSL altitude)		
Day, except as provided in §91.155(b)	1 statute mile	Clear of clouds.
Night, except as provided in §91.155(b)	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface but less than 10,000 feet MSL		
Day	1 statute mile	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Night	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL	5 statute miles	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.

Special VFR (FAR 91.157)

ATC clearance required. Must operate clear of clouds with minimum 1 sm visibility.

Night SVFR: instrument-rated pilot and instrument-equipped aircraft.

VFR Cruising Altitude above 3000ft AGL and below FL180 (FAR 91.159)

Magnetic course 0 – 179 degrees, odd thousand foot MSL + 500 ft (such as 3,500 or 7,500)

Magnetic course 180 – 359 degrees, any even thousand foot MSL + 500 ft (such as 4,500 or 8,500)

Subpart C

Required Certificate - AROW (FAR 91.203)

Airworthiness certificate

Registration Certificate

Operating manual/limitations

Weight and Balance

Required Instruments: Day VFR - TOMATO FLAMERS (FAR 91.205)

Tachometer

Oil pressure

Manifold pressure (altitude engine)

Altimeter

Temperature gauge (liquid cooled)

Oil temperature

Fuel gauges (each tank)

Landing gear indicator

Airspeed indicator

Magnetic direction indicator

ELT

Red or White anti-collision beacon

Seat belts

Required Instruments: Night VFR - FLAPS (FAR 91.205)

Fuses (if equipped)

Landing light (if for hire)

Anti-collision lights (strobes)

Position lights (navigation lights)

Source of electricity (alternator/generator)

Emergency Locator Transmitter (ELT) (FAR 91.207)

Inspected every 12 calendar months

Batteries must be replaced if:

1. In use for more than 1 hour
2. 50% of battery life has been extinguished
3. Expiration date has passes

An ELT is not required when:

1. Ferrying an airplane to get an ELT installed/repaired
2. Scheduled flights (airlines)
3. Training operations conducted within 50nm of airport
4. Design and testing
5. New aircraft involved in manufacture, delivery, preparation, design, testing
6. Agriculture operations
7. Certified for research and development
8. Used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys
9. One person airplanes

Operations after the removal of an ELT:

1. Placarded in cockpit
2. Entry made in aircraft records
3. Removed for no longer than 90 days

Lights (FAR 91.209)

Day: anti-collision (if equipped)

Night (between sunset and sunrise): position and anti-collision

Oxygen Requirements (FAR 91.211)

12,500-14,000: crew must use oxygen if flight is over 30 minutes

14,000 and above: crew must use oxygen at all times

15,000 and above: passengers must be provided with oxygen

Minimum Equipment List (FAR 91.213)

Inoperative instruments cannot be required by

1. FAR 91.205 (TOMATO FLAMERS)
2. Type certification
3. Equipment list
4. Airworthiness directive

Inoperative instruments must be deactivated and placarded inoperative

Transponder (FAR 91.215)

Must be operating:

1. A, B, C airspace
2. Within 30 nm of B airspace
3. Above ceiling of B or C airspace
4. At and above 10,000' MSL
5. Special codes

a. 1200: VFR
b. 7500: Hijacking
c. 7600: Lost communications
d. 7700: Emergency
e. 7777: Military interceptor

Subpart D

Aerobatic Flight (FAR 91.303)

Unauthorized in the following areas:

1. Over a congested city, town, settlement
2. Over an open air assembly of people
3. B, C, D, E airspace surface areas of an airport
4. Within 4 nm of the centerline of a Victor airway
5. Below 1500' AGL (unless you have a waiver)
6. When the visibility is less than 3sm

Parachutes (FAR 91.307)

Emergency chutes: packed within 180 days if exclusively synthetic (nylon, rayon, or similar fiber), 60 days if any part is made of silk, pongee, or natural fiber.

Need to have if you are intentionally exceeding 60 degree bank/ 30 degree pitch

Doesn't apply: Flight test for certificate/rating

Spins/flight maneuvers required for certificate/rating if given by a CFI

Subpart E- Maintenance

Airworthiness (FAR 91.403)

Owner/operator is primarily responsible for maintaining airworthiness PIC is responsible for determining if aircraft is in airworthy condition

The following are the required inspections (AV1ATE)

Annual - 12 calendar months (FAR 91.409)

VOR check - 30 days (IFR)

100 hours (tach time) - for hire (FAR 91.409)

Altimeter/Pitot Static System – 24 calendar months (IFR) (FAR 91.411)

Transponder - 24 calendar months (FAR 91.413)

ELT- 12 calendar months

Required Inspections (FAR 91.409)

Annual: 12 calendar months

100-hour: hire, instruction for hire (my airplane instructing someone else)

-Annual can take place of a 100-hour

-Can fly up to 10 hours over to get the aircraft to an inspection place, but those hours count against the next 100 hours

Altimeter and Altitude Reporting (FAR 91.411)

If operating in controlled airspace under IFR - every 24 calendar months:

1. Static pressure check
2. Altimeter instrument
3. Automatic pressure altitude reporting system check

Transponder Tests (FAR 91.413)

24 calendar months - If transponder is required

Maintenance Records (FAR 91.417)

Registered owner/operator must keep the following records (airframe, engine, prop)

1. Maintenance
2. Preventative maintenance
3. Alterations
4. 100-hour
5. Annual
6. Progressive inspection
7. Other required inspections
    a. Records kept for 1 year, or until work is repeated

Records must include-

1. Description of work
2. Date of completion
3. Signature, certificate number of person approving return to service

Other record include-

1. Total time in service (airframe, engine, prop)
2. Status of life- limited parts
3. Time since last overhaul
4. Current inspection status
5. Current status of airworthiness directive
    a. Method of compliance
    b. AD number

c. Revision date

d. Recurring AD- time and date when next action is required

6. Copies of forms for major alterations
    a. Records kept until aircraft is sold (transferred to new owner)

Owner/operator must make these records available to NTSB/FAA

-Form 337 made available to law enforcement officers

Preventative Maintenance (FAR 43 Appendix A Paragraph C)

1. Removal, installation, and repair of landing gear tires
2. Replacing elastic shock absorbers cords on landing gear
3. Servicing landing gear shock struts: oil/addition
4. Servicing landing gear wheel bearing cleaning/greasing
5. Replacing defective safety wiring or cotter keys
6. Lubrication not requiring complex disassembly
7. Simple fabric patches, not requiring rib stitching
8. Replenishing hydraulic fluid in the hydraulic reservoir
9. Refinishing decorative coating of:
    i. Fuselage
    ii. Balloon baskets
    iii. Wings, tail group surfaces
    iv. Fairings
    v. Cowlings
    vi. Landing gear
    vii. Cabin
    viii. Cockpit interior
10. Applying preservative or protective material
11. Repairing upholstery and decorative finishing
12. Small simple repairs to fairings, nonstructural cover plates, cowlings, small patches and reinforcements not interfering with proper airflow
13. Replacing side windows

14. Replacing safety belts
15. Replacing seats or seat parts with approved parts
16. Troubleshooting and repairing broken circuits in landing light wiring circuits
17. Replacing light bulbs reflector, and lenses of position and landing lights
18. Replacing wheels and skis where no weight and balance computation is involved
19. Replacing any cowling not requiring removal of the propeller or disconnection of flight controls
20. Replacing or cleaning spark plugs, setting gap clearance
21. Replacing any hose connections (not hydraulic)
22. Replacing prefabricated fuel lines
23. Cleaning or replacing fuel and oil strainers or filter elements
24. Replacing or servicing batteries
25. Cleaning of balloon burner pilot and main nozzles
26. Replacement of adjustment of non-structural standard fasteners incidental to operations
27. Interchange of balloon baskets and burners
28. Installations of anti-misfueling devices to reduce the diameter of duel tank filler openings
29. Removing, checking and replacing magnetic chip detectors
30. The inspection and maintenance tasks prescribed and specifically identifies as preventative maintenance

*Must be performed by private pilot, registered owner and must be logged appropriately

NTSB 830

Immediate NTSB Notification (FAR 830.5):

1. Flight control system malfunction or failure
2. Inability of required crew member to perform normal duties due to illness/injury
3. Failure of structural components or a turbine engine
    a. Excluding compressor and turbine blades and vanes
4. In-flight fire
5. Aircraft collide in flight
6. Damage to property estimated to exceed $25,000 (not including aircraft)
7. Aircraft overdue and believed to have been involved in an accident

Items to Notify NTSB (FAR 830.6):

1. Type, nationality, and registration marks of airplane
2. Name of owner and operator
3. Name of pilot in command
4. Date and time of accident/incident
5. Last point of departure and intended point of landing
6. Position of aircraft with reference to a geographical point
7. Number of persons aboard, number killed, number seriously injured
8. Nature of accident/incident weather, extent of aircraft damage
9. Description of any explosive, radioactive material, or other dangerous articles

Definitions (FAR 830.2):

Aircraft accident: takes place in between time person boards the aircraft with intention of flight and all such persons have disembarked

-Death

-Serious injury

-Aircraft receives substantial damage

Fatal injury: results in death within 30 days

Incident: occurrence associated with the operation of an aircraft, which affects or could affect safety

Serious injury:

1. Requires hospitalization for more than 48 hours
2. Results in bone fracture (not nose, fingers, toes)
3. Causes severe hemorrhages, nerve muscle, or tendon damage
4. Involves any internal organ
5. Involved 2nd or 3rd degree burns
6. Involved any burns covering over 5% of body

Substantial Damage: damage or failure affecting-

1. Structural strength
2. Performance
3. Flight characteristics-which would normally require major repair/replacement

Preservation of wreckage (FAR 830.10): may not be disturbed except-

1. To remove injured or trapped persons
2. Protect wreckage from further damage
3. Protect public from injury

When it is necessary to move wreckage

1. Sketched
2. Descriptive notes
3. Photos if possible should be made

Owner shall retain records, reports, internal documents, and memoranda until notified by the NTSB

File a report: within 10 days after an accident (FAR 830.15)

Within 7 days if overdue aircraft still missing (FAR 830.15)