

FAA **Private & Commercial** Pilot Subject Knowledge Areas



This list is from the GFT Aviation Online Ground School and is the exact list of knowledge areas listed in the FAA Private & Commercial Pilot Airmen Certificate Standards (ACS). Variances in the Commercial knowledge areas are identified during on-line or ground-school sessions.

Our students use this checklist as they study during GFT Aviation three/Five Day Ground Schools OR On-Line Zoom Sessions.

After their first practice test they fill out this checklist. When you are confident in an area of knowledge (consistently answering quiz and practice test questions in that area) mark it with a check-mark. This way, you will be able to revert back to this list to see which areas are still not marked and therefore, areas you need to focus your studies on. This will make your studying more efficient and help reduce the amount of time and stress involved in studying.

Rules & Regulations

- Categories, Classes of Airmen and Aircraft
- Pilot In-Command Responsibility
- Drugs and Alcohol
- Aircraft Operating Limitations
- Seatbelts & Harnesses
- Currency
- Minimum Flight Hour Experience
- Required Equipment
- Required Inspections
- Airworthiness Directives (ADs)
- Night Definitions
- Preventative Maintenance
- Pilot Documents
- Medical Certificates
- Other Ratings
- Private Pilot Limitations (for hire)
- Speed Limits
- Maintenance (Part 43)
- Accidents & Incidents

Aircraft Systems

- Aircraft Engines
 - Carburetor
 - Carburetor Heat
 - Ignition
 - Abnormal Combustion
 - Cooling Systems
 - Engine Health

- Propellers

- Fuel Systems & Fuel Types

- Oil Systems

- Flight Instruments
 - Pitot-Static System
 - Vacuum System
 - Airspeed Indicator
 - V-speeds
 - Altimeter
 - Types of Altitudes (Pressure, True, Absolute, Density)
 - Vertical Speed Indicator
 - Turn Coordinator
 - Attitude Indicator
 - Heading Indicator
 - Magnetic Compass
 - Deviation
 - Variation
 - Turning & Accelerating Errors

- Flight Controls & Control Surfaces
- Emergency Locator Transmitters (ELTs)
- Antennas
- Aircraft Lights
 - Landing Lights
 - Position Lights
 - Anti-Collision Lights

Aerospace Fundamentals

- Forces of Flight
 - Lift
 - Drag

- Induced Drag
- Parasite Drag

- Weight
- Thrust

- Angle of Attack
- Flaps
- Ground Effect
- Stall

- Critical Angle of Attack

- Load Factor
- Spin
- Stability
- Center of Gravity
- Center of Pressure

Flight Environment

- Right of Ways
- Visual Scanning Techniques
- Minimum Safe Altitudes
- Taxiing in Wind

Airports

- Runway Maps & Layouts
- Runway Markings & Signs
- Segmented Circles & Wind Socks
- Beacons
- Visual Glideslope Indicators
- Taxiway Lights
- Pilot Controlled Lighting

Airport Operations

- ATC Clearance
- Land and Hold Short Operations (LAHSO)
- Communication & Radio Procedures
 - Using Numbers
 - Coordinated Time (Time Zones)
- Traffic Patterns

Aeronautical Charts

- Latitude & Longitude
- Sectional Charts
- Chart Symbols
- Airport Information

- Communication Facility Information

Airspace

- Class A
- Class B
- Class C
- Class D
- Class E
- Class G
- Special VFR
- Special Use Airspace
 - Alert Areas
 - Military Operation Areas (MOAs)
 - Warning
 - Restricted
- Military Training Routes

Communication & Flight Information

- Transponders
- Radar Services
- ATIS
- Flight Service Stations (FSSs)
- Airport Directories/Chart Supplements
- Advisory Circulars

Weather (theory)

- Atmospheric Circulation
- Atmospheric Pressure
- Air Masses & Fronts
- Temperature Effects
- Atmospheric Stability
- Temperature Inversions
- Moisture
 - Relative Humidity
 - Dewpoint
 - Fog
 - Clouds & Cloud Types
- Precipitation
- Thunderstorms
 - Types
 - Life Cycle
 - Hazards
- Turbulence
 - General Turbulence
 - Wake Turbulence

- Mountain Wave Turbulence

- Wind Shear

- Icing

Weather Information (services)

- METARs

- PIREPs

- TAFs

- Area Weather Forecasts

- Wind and Temperatures Aloft

- AIRMETs

- SIGMETs

- CONVECTIVE SIGMETs

- Surface Analysis Charts

- Weather Depiction Charts

- Radar Summary Charts

- Significant Weather Prognostic Chart

- En Route Flight Advisory Service (EFAS)

Airplane Performance

- Density Altitude Effects

- Takeoff & Landing Performance

- Climb Performance

- Cruise Performance

- Crosswinds & Headwinds

- Weight & Balance

- Principles

- Calculating

- Shifting Weights

- Flight Computers (E6B)

- Distance/Time/Speed Calculations

- True Airspeed/Indicated Airspeed

- Pressure Altitude/Density Altitude

- Performance Maneuvers

- Wind Effects & Turns

Pilotage & Dead Reckoning

- Course

- VFR Cruising Altitudes

- Fuel Requirements

Navigation

- VORs

- GPS

Human Factors

- Night Vision
- Disorientation
- Respiration & Altitude
 - Hypoxia
 - Supplemental Oxygen
 - Scuba Diving Effects & Rules
- Carbon Monoxide
- Hyperventilation
- Aeronautical Decision Making Process
- Hazardous Attitudes

Cross-Country Flights

- Endorsements
- Flight Planning

