

Flight Sim Maneuvers 21st Century

By Bill Stack

Eighteen Chapters Dedicated to Specific Topics

1. **How Aircraft Fly.** Lift, thrust, drag, angle of attack, inertia, yaw, roll, pitch, torque, propwash, P-factor, gravity, wind.
2. **Knowing Your Aircraft.** Performance specifications and characteristics. Cockpits, panels, flight instruments and gauges, aircraft instruments and gauges. Analog, glass, hybrids. Controls, knobs, handles, switches, yokes, sticks, throttles, mixture. Communication and navigation radios.
3. **Knowing Your Airports.** Elevations, layouts, runways, taxiways, parking areas, gates, intersections, hot spots, turnarounds, frequencies, services. Controlled, uncontrolled.
4. **Planning Your Flights.** Choosing appropriate departure and destination airports. Determining flight distance. Knowing take-off and landing distances. Applying speed, distance, and time. Calculating fuel needs. Getting weather briefings.
5. **Preparing Your Aircraft.** Managing weight and balance. Preparing your cockpit. Starting your engines. Turning on electrical systems and devices. Setting altimeter. Tuning radios. Running up.
6. **Moving Around Airports.** Following signs, markings, and lighting. Getting clearances at controlled airports. Announcing intentions at uncontrolled airports. Using airport diagrams and maps. Taxiing safely. Adapting to wind effects. Final preparations at runway holding areas.
7. **Taking Off.** Receiving clearances to take off at controlled airports. Announcing intentions to take off at uncontrolled airports. Taxiing onto runways. Take-off phases – roll, rotation, liftoff. Fixed and variable take-off factors – field elevations, atmospheric temperature, winds. Choosing flaps. Using take-off checklists. Aborting take-offs.
8. **Difficult Take-offs.** Short fields, tall obstacles, high elevations, high density altitude, hot-and-humid weather, soft surfaces, severe winds, slippery surfaces. Formulas for calculating high density altitude and take-off distances.



9. **Climbing.** Rotation speeds, lift-off speeds, initial-climb speeds, landing-gear retraction, flaps retraction, obstacle clearance, best climb rates and angles. Attitude flying. Wind effects. Torque, P factor, and ground effect. Engine performance and limits. Risk of stalling.
10. **Cruising.** Highest cruising altitude versus best cruising altitude. Highest attainable airspeed. Elementary cruising procedures. Flying straight and level. Maintaining heading and airspeed. Compensating for winds.
11. **Descending.** Determining target altitude. Deciding when to begin descending and when to stop. Controlling descent airspeed and vertical speed. Turning while descending. Relying on flight instruments. Adjusting fuel mixture. Monitoring instruments.
12. **Turning.** Types of turns – moderate, steep, descending, ascending, level flight. Bank angles, turn radii, coordination, skids, slips, standard rates. Using ailerons, rudder, and elevator. Relying on instruments for best turns – turn-and-bank indicator, inclinometer, skid/slip indicator, altimeter, vertical speed indicator, airspeed indicator. Respecting load effects and G factors.
13. **Stalling.** Types of stalls. Common risks and hazards. Stall indications. Stall prevention and recovery. Spin avoidance and recovery. Deliberate and controlled stalls.
14. **Airport Traffic Pattern.** Where airport patterns are used. Common names for airport patterns. Parts of the pattern. Standard procedures. Pattern entrances. Wind compensation. Demands on pilots. Common errors.
15. **Approaching for Landing.** Calculating landing distances. Controlling final descent rate and speed. Deflecting flaps. Tracking runway centerlines. Compensating for winds. Using visual cues. Avoiding stalls. Deciding go or no-go. Approaching high and steeply.
16. **Landing.** Threshold crossing. Flare, roundout, leveloff. Touchdown. Postlanding roll. Holding the centerline. Demands on pilots. Common problems. Bouncing, floating, climbing, aborting. Runway exit.
17. **Challenging Landings.** Crosswinds and gusts. Short runways. High elevations. High density altitude. Soft, snowy, and icy surfaces.
18. **Go-Arounds and Touch-and-Goes.** Aborted landings. Proper go-around and touch-and-go procedures. Training exercises.
19. **Abbreviations.** Abbreviations used in the book are clearly and concisely defined in a separate appendix.