Chapter 05: Flight School Operations

03. Aircraft Maintenance and Inspection

Maintain training aircraft airworthiness through systematic maintenance and inspection programs to ensure safe flight operations and regulatory compliance.

Purpose

Establish procedures for coordinating training aircraft maintenance, conducting required inspections, and maintaining airworthiness documentation to ensure safe flight training operations while minimizing aircraft downtime and training disruptions.

Roles and Responsibilities

Flight Instructor:

- Conduct student assessments and training
- Review training objectives with students
- Coordinate aircraft scheduling for training
- Maintain communication with students on progress
- Ensure safety and regulatory compliance

Chief Flight Instructor:

- Review student qualifications and training goals
- Assign appropriate flight instructors based on needs
- Conduct flight school orientation and safety briefings
- Approve training program selection and scheduling
- Ensure Part 61 compliance for all training operations

Process Steps

Daily Aircraft Status Review Phase

- **Review maintenance status** - Check aircraft logbooks and maintenance tracking system for currency
- **Verify inspection compliance** - Confirm annual, 100-hour, and other required inspections are current

- **Check discrepancy reports** - Review any reported aircraft issues from previous flights
- **Coordinate maintenance scheduling** - Plan maintenance activities to minimize training disruptions

Pre-Flight Inspection Phase

- **Conduct pre-flight inspection** - Complete systematic aircraft inspection using approved checklist
- **Review aircraft logbooks** - Verify airworthiness certificate, registration, and required inspections
- **Check fuel and oil levels** - Confirm adequate fuel quantity and oil levels for planned flight
- **Test aircraft systems** - Verify proper operation of all required systems and equipment

Post-Flight Documentation Phase

- **Complete post-flight inspection** - Conduct post-flight aircraft inspection for new discrepancies
- **Document flight time** - Record accurate flight time in aircraft logbooks and maintenance records
- **Report discrepancies** - Document any observed aircraft issues or maintenance needs
- **Update maintenance tracking** - Record flight hours and schedule upcoming maintenance requirements

Maintenance Coordination Phase

- **Schedule required maintenance** - Coordinate maintenance activities with certified mechanics
- **Manage aircraft downtime** - Minimize training schedule disruption during maintenance periods
- **Verify maintenance completion** - Review completed maintenance work and required documentation
- **Return aircraft to service** - Conduct airworthiness review and authorize return to training operations

Process Mapping

Flowchart showing maintenance workflow from inspection through maintenance completion and return to service

Tools and Resources

Inspection Equipment:

- Aircraft-specific inspection checklists
- Maintenance logbooks and documentation
- Pre-flight inspection tools and equipment
- Aircraft systems testing equipment

Documentation Systems:

- Aircraft maintenance tracking system
- Flight time recording system
- Discrepancy reporting forms
- Maintenance work order system

Reference Materials:

- Aircraft maintenance manuals and service bulletins
- Federal Aviation Regulations Part 91 and Part 43
- Aircraft inspection requirements and intervals
- Approved maintenance provider contact information

Success Metrics

- **Completion Time:** Aircraft discrepancies reported within 1 hour of discovery.
- **Quality Standard:** 100% of required inspections completed before expiration dates.
- **Safety Standard:** Zero training flights conducted with unairworthy aircraft.
- **Client Satisfaction:** Less than 5% of scheduled lessons cancelled due to aircraft maintenance issues.

Common Issues and Solutions

- **Issue:** Unexpected aircraft discrepancies disrupting scheduled training flights
- **Solution:** Maintain backup aircraft availability and implement rapid discrepancy assessment procedures to minimize training disruptions

Issue: Maintenance scheduling conflicts with peak training demand periods

Solution: Schedule routine maintenance during low-demand periods and coordinate with flight school scheduler for advance planning

Issue: Student pilot uncertainty about pre-flight inspection procedures

Solution: Provide thorough pre-flight inspection training and maintain standardized inspection checklists for each aircraft type

Safety Considerations

- ⚠ **WARNING**: Never authorize flight operations with aircraft that have unresolved airworthiness

discrepancies or expired inspections

⚡ **CAUTION**: Ensure all maintenance work is performed by appropriately certified mechanics and properly documented in aircraft logbooks

ℹ️ **NOTE**: Aircraft must be grounded immediately upon discovery of any condition that affects airworthiness or flight safety

✅ **BEST PRACTICE**: Conduct pre-flight inspections in adequate lighting conditions and allow sufficient time for thorough inspection

Regulatory References

- 14 CFR Part 91.409 - Inspections and maintenance requirements
- 14 CFR Part 91.405 - Maintenance required for aircraft operations
- 14 CFR Part 43 - Maintenance, preventive maintenance, rebuilding, and alteration
- 14 CFR Part 91.7 - Civil aircraft airworthiness requirements
- FAA Advisory Circular AC 43-12 - Preventive maintenance