



Certifying Technical Employee Competence™

Aviation Structures Technician Study Guide



DESCRIPTION

This Aviation Structures Technician Study Guide is designed to be used in preparing for the CertTEC Aviation Structures Certification examination. The study guide addresses each CertTEC knowledge and characteristics standard and the required level of understanding to be successful with the examination. The Aviation Structures examination will ask one or more questions from the following standards areas:

1. Introduction to Aviation
2. Shop Math
3. Personal and Environmental Safety
4. Aircraft Materials and Fasteners
5. Blueprints/Manuals
6. Federal Aviation Regulation (FAR's)
7. Documentation
8. Precision Measuring Equipment
9. Rivet Installation and Removal
10. Fabrication
11. Assembly
12. Repair

Topics 1-8 Knowledge Based (Covered in Written & Oral Exam)

Topics 9-12 Performance Based (Covered in Practical Exam)

Use of this study guide coupled with a serious review of the references and study materials that are provided on the CertTEC website (<https://spacetec.us/certtec/>) will ensure the individual is adequately prepared to join the ranks of Certified Aviation Structures Technicians.

REFERENCES

1. [ASA Aviation Mechanic Handbook, Dale Crane, The Seventh Edition](#)
2. [Human Factors in Aviation Maintenance, Human Factors in Aviation Maintenance \(faa.gov\)](#)
3. [United States, Federal Aviation Administration. \(1976\). AC65-15A Airframe and Powerplant Mechanics Airframe Handbook. Washington: GPO.](#)
4. [United States, Federal Aviation Administration. \(1998\). AC43.13 1B \(With Change 1\) & 2A* \(With Change 2\): Acceptable Methods, Techniques, and Practices: Aircraft Inspection, Repair, and Alterations. Washington: GPO. Reprinted by Jeppesen Sanderson Training Products. *As of 03/03/2008, 2A, Alterations, is revised to 2B](#)

Proficiency Code Key

	Level	Definition
Subject Knowledge Levels	1	Can identify basic facts and terms about the subject. (FACTS)
	2	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	3	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	4	Can evaluate conditions and make proper decisions about the subject (EVALUATION)
Task Knowledge Levels	1	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	2	Can determine step by step procedures for doing the task. (PROCEDURES)
	3	Can identify why and when the task must be done and why each step is needed. (OPERATING PROCEDURES)
	4	Can predict, isolate, and resolve problems about the task. (ADVANCED THEORY)
Task Performance Levels	1	Can do parts of the task. Needs to be supervised doing most of the task. (LIMITED)
	2	Can do most of the task. Needs help only on hardest parts. (PARTIALLY PROFICIENT)
	3	Can do all parts of task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)



1. Demonstrate Basic Knowledge of Introduction to Aviation

Proficiency: SK2, TK2

- Critical Thinking Skills
- Human Factors in Aviation Maintenance
- Organizational Skills
- Quality Management Systems
- Terminology & Acronyms

Resources:

- www.careeraddict.com/top-10-skills-needed-for-a-job-in-aviation
- [Human Factors in Aviation Maintenance \(faa.gov\)](http://faa.gov)
- [MAINTENANCE LEVELS AND TYPES OF MAINTENANCE \(tpub.com\)](http://tpub.com)
- AS9110A Quality Management System for Aviation Maintenance
- [Maintenance Acronyms and Abbreviations in Aviation \(allacronyms.com\)](http://allacronyms.com)

2. Demonstrate Knowledge of Shop Math

Proficiency: SK2, TK2

- Application of Shop Math

Resources:

- [Microsoft PowerPoint - ShopMath1.ppt \(pgworks.com\)](http://pgworks.com)
- [Microsoft PowerPoint - Shop Math 2 print.ppt \(pgworks.com\)](http://pgworks.com)

3. Demonstrate Knowledge of Personal and Environmental Safety

Proficiency: SK2, TK2

- Accident/Incident Reporting
- Clean as you go
- FOD
- Lifting Techniques
- Lockout/Tagout
- MSDS's
- OSHA Regulations
- PPE
- Safe Work Habits
- Tool & Hardware Inventory (Shadowing, Tethering, Sponge Count)

Resources:

- [Microsoft Word - DHHS Incident Response and Review Manual-FINAL.doc](http://DHHS.gov)
- [Aerospace Best Practices: Clean As You Go | Aviation Pros](http://AviationPros.com)
- [FAA Foreign Object Debris Program](http://FAA.gov)



- [Safe Lifting | OSHA Safety Manuals \(safetymanualosha.com\)](http://safetymanualosha.com)
- [Control of Hazardous Energy \(Lockout/Tagout\) - Overview | Occupational Safety and Health Administration \(osha.gov\)](http://osha.gov)
- [Hazard Communication Standard: Safety Data Sheets \(osha.gov\)](http://osha.gov)
- [Law and Regulations | Occupational Safety and Health Administration \(osha.gov\)](http://osha.gov)
- [Personal Protective Equipment - Overview | Occupational Safety and Health Administration \(osha.gov\)](http://osha.gov)
- [The Ten Commandments Of Good Safety Habits | OSHA Safety Manuals \(safetymanualosha.com\)](http://safetymanualosha.com)
- [Tool Control and Accountability \(nasa.gov\)](http://nasa.gov)

4. Identify the Characteristics of Aircraft Materials and Fasteners

Proficiency: SK2, TK2

- Composites Fabrication Process
- Fasteners
- Heat Treatment
- Material Composition
- Non-Metallic Materials
- Sealing Materials
- Sheet Metals

Resources:

- Essentials of Composite Fabrication and Repair (2nd Ed.), Chapter 2
- TO 1-1A-1/NAVAIR 01-1A-1, Engineering Handbook Series For Aircraft Repair General Manual For Structural Repair
- [Aircraft Adhesives & Sealants to Boeing Standard BAC5000 - Bing video](#)

5. Demonstrate Knowledge of Blueprints/Manuals

Proficiency: SK3, TK3

- Blueprint Reading
- Engineering Documentation
- Research

Resources:

- [Aircraft Drawing and Blueprint Reading \(sdmiramar.edu\)](http://sdmiramar.edu)



6. Demonstrate Knowledge of Federal Aviation Regulations (FARs)

Proficiency: SK3, TK3

- ATA Codes
- FARs

Resources:

- [ATA Codes \(helitavia.com\)](http://helitavia.com)
- [FAA Regulations](#)

7. Demonstrate knowledge of Documentation

Proficiency: SK3, TK3,

- Component Specific (including Condition)
- Routine vs. Non-routine
- Sign Off
- Technical Writing
- Work Progress/Turnover

Resources:

- [tech_pubs_workshop_report_final_9-12.pdf \(faa.gov\)](#)
- [FAA Writing Guidelines](#)
- [The Effect of Shift Turnover Strategy and Time Pressure on Aviation Maintenance Technician Performance \(erau.edu\)](#)

8. Demonstrate knowledge of Precision Measuring Equipment

Proficiency: SK3, TK3,

- Calibration
- Tools & Equipment (Assemble, Fabricate, Install, Repair)
- Torquing Fasteners

Resources:

- [Aircraft Fasteners & Torque to Boeing Standard Specification BAC5009 - Bing video](#)



9. Demonstrate knowledge of Rivet Installation and Removal

Proficiency: SK3, TK2, TP2

- Countersinking
- Deburring
- Drilling
- Layout
- Reaming
- Rivet Removal

Resources:

- [AC 43.13-1B - Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair \[Large AC. This includes Change 1.\] – Document Information \(faa.gov\)](#)

10. Demonstrate the knowledge of Fabrication

Proficiency: SK2, TK2, TP2

- Fabrication Materials & Processes
- Fabricate per Sample Part
- Polishing
- Tool/Equipment-Fabrication

Resources:

- [AC 43.13-1B - Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair \[Large AC. This includes Change 1.\] – Document Information \(faa.gov\)](#)

11. Demonstrate knowledge of Assembly

Proficiency: SK2, TK2

- Assembly Fixtures
- Assembly Procedures
- Fitment
- Tools & Equipment-Assembly

Resources:

- [AC 43.13-1B - Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair \[Large AC. This includes Change 1.\] – Document Information \(faa.gov\)](#)



12. Demonstrate knowledge of Sheet Metal Repair

Proficiency: SK2, TK2, TPS

- Corrective Action
- Inspection/Damage Assessment
- Repair Procedures
- Tools & Equipment-Repair
- Visual Inspection

Resources:

- [AC 43.13-1B - Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair \[Large AC. This includes Change 1.\] – Document Information \(faa.gov\)](#)