



GE Aviation Technical Training  
**Course Catalog**

# History of GE

From the first turbosupercharger to the world's most powerful commercial jet engine, GE's history of powering aircraft spans nearly a century of innovation.

GE Aviation is a world-leading provider of commercial and military jet engines and components as well as integrated digital, electric power, and mechanical systems for aircraft. GE Aviation also has a global service network to support these offerings.

Technological excellence, supported by continued investments in research and development, has been the foundation of GE Aviation's growth and helps to ensure quality products for customers well into the future.



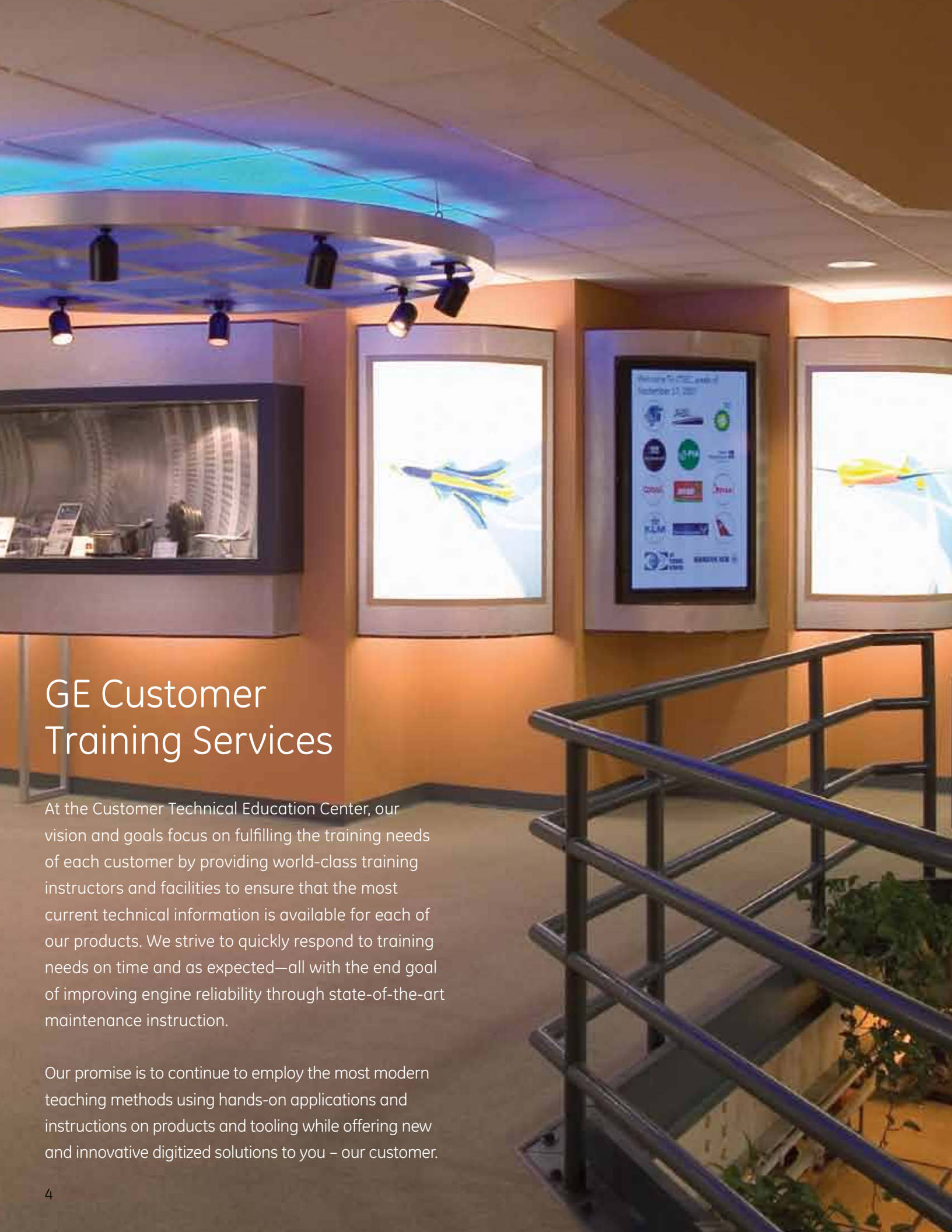
## Technology Innovation

- First U.S. Jet Engine
- First Turboprop Engine
- First Variable Stator Engine
- First Mach 2 Engine
- First High-Bypass Engine
- First Variable Cycle Turbofan Engine
- First Unducted Fan Engine
- First 30:1 Pressure Ratio Engine
- GE90-115B World Record Steady-State Thrust: 122,965 lbs.



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# GE Customer Training Services

At the Customer Technical Education Center, our vision and goals focus on fulfilling the training needs of each customer by providing world-class training instructors and facilities to ensure that the most current technical information is available for each of our products. We strive to quickly respond to training needs on time and as expected—all with the end goal of improving engine reliability through state-of-the-art maintenance instruction.

Our promise is to continue to employ the most modern teaching methods using hands-on applications and instructions on products and tooling while offering new and innovative digitized solutions to you – our customer.

# Global Footprint



## CTEC

The Customer Technical Education Center (CTEC), located just outside Cincinnati, Ohio, provides technical training to customer mechanics, powerplant engineers, GE employees and other representatives on a daily basis to help ensure fleet reliability. More than 4,000 customer students pass through the doors of CTEC each year.

CTEC employs a staff of world-class engine training experts who deliver not only technical training, but also real-world application instructions for each of the GE and CFM International engine programs.

CTEC also provides regular customer tours of the training facility as part of its support for customers. In addition, monthly “Voice of the Customer” lunches are held to better understand customer training and technical needs.

Onsite classes are also available to customers who desire a private course for a large number of their mechanics.



## AEMTC

The Aero Engine Maintenance Training Center (AEMTC)—a cooperative training institute comprised of Chinese partners, Snecma, CFM International, and GE Aviation—specializes in maintenance training for GE and CFM commercial aircraft engines.

Since 1996, the center has trained more than 6,000 students from airlines throughout Asia. Located on the campus of the Civil Aviation Flight University of China (CAFUC), AEMTC is a two-story building containing six classrooms and a shop with six training engines. There are four instructors who conduct training classes for CFM56-3, CFM56-5B, CFM56-7B, and CF6-80C2 line maintenance, borescope inspection and advanced engine systems.

AEMTC keeps close ties with the CFM International training facilities at GE Aviation (CTEC) and Snecma (CTC) by sharing the same training materials, quality control measurements and instructor best practices. AEMTC also keeps close contact with the GE/CFM Field Service team in China in order to tailor special training and seminars to an airline’s requirements.



## GE ATRC

The new GE Advanced Technology & Research Center (ATRC) is located in Doha, Qatar, in the Middle East. This GE Aviation technical customer training facility is part of the Qatar Science & Technology Park within Education City.

The new 13,400-square-meter (144,238-square-foot) facility includes six digital classrooms, as well as 14 engine/tooling bays for the “hands-on” portion of the technical learning offerings. In addition, GE Oil & Gas, GE Healthcare and the GE Global Research Center will be located within the facility.

The facility opened in 2010 and features a full assortment of training on various engine models. Popular class offerings such as Line Maintenance, Borescope, Engine Change and Module Assembly & Disassembly will be available to qualified customers.

Additional Facility Highlights:

- 490 square meters (5,260 square feet) of lab space
- 150-seat auditorium
- 465-square-meter (5,000-square-foot) product display lobby

# ATA 104 Specifications

All GE courses comply with ATA 104 Specifications.

## Level I General Familiarization

Personnel must be familiar with current equipment and have a general knowledge of turbine-powered transport aircraft. Level I provides a brief overview of the airframe, systems, and powerplant as outlined in the Systems Description Section of the Aircraft Maintenance Manual.

## Level II Ramp and Transit

Personnel must be familiar with turbine-powered transport aircraft, digital electronic equipment, and have experience in ramp, transit and turnaround activity. Level II provides a basic system overview—a description of controls, indicators, and principal components, including their locations and practical training on servicing and minor troubleshooting.

## Level III Line and Base Maintenance Training

In addition to requirements for levels I and II, personnel attending level III training should possess the knowledge and experience required to maintain turbine-powered transport aircraft. Level III provides a detailed description, operation, component location, removal/installation, BITE and troubleshooting procedures to maintenance manual level.

## Level IV Specialized Training

Personnel must have considerable experience in the field in which training will be received. Level IV provides a detailed description, component location, in-depth troubleshooting, adjustment, test procedures, rigging, engine run-up, in-depth use of wiring diagrams, schematics and engineering data. Entry level is defined by subject matter.

## Level V Component Overhaul Training

Personnel must meet prerequisites established by the vendor. Specialized maintenance/overhaul training is conducted by airframe/engine/avionics manufacturers and/or their suppliers and/or airlines to a component maintenance manual level. Entry level is defined by subject matter.



# Services Offered

GE Aviation's Customer Training Services Team is constantly studying flight data and adapting our classes to best suit our customers' needs—*your* needs. Our team is committed to providing quality training to our customers to help reduce maintenance errors and improve fleet reliability. That's why we offer a complete curriculum of technical training courses on our products. Our philosophy is simple: Better maintenance practices reduce operation disruptions. So it's no surprise that our courses are designed to simulate the environment in which you work and the real-world problems you encounter.

## Translations

All classes and training material are presented in English. Additional class time may be required if a translator is needed; please discuss during class scheduling. Customers are responsible for supplying their own translators.

## Distance Education

Distance education allows customers to receive the academic portions of a traditional instructor-led class without the expense of traveling to one of our training centers or paying for an instructor to come to their site. Individual students can log into a standard online collaborative meeting format and call into the class. They will receive the same information and have the same level of participation as if they attended the class in person.

## Hybrid Training

Hybrid training allows you the choice to use Academic Line Maintenance as part of your recurrent training program for experienced mechanics, while allowing those with less experience the opportunity to receive hands-on maintenance training at one of our training centers, saving you time and money. After a student attends an Academic Line Maintenance class either through Distance Education or at their site, they can attend an LRU Removal/Installation class at one of our training centers. A student can also use the Line Maintenance e-Study CBT as a prerequisite to attending the LRU class.

## Troubleshooting

This two-day class will focus on the engine fault indications and troubleshooting logic using current fleet data to highlight the issues customers see most. Dedicated Troubleshooting classes are available on most engine lines. See course description for details.

## Field Training Program

Under this program, a CTEC instructor provides training and support beyond what is achievable in the classroom at the customer's facility. This program is especially beneficial to customers introducing a new engine type into their fleet, as a GE expert can work with technicians on the flight line, answering questions and providing education on issues as they occur. These experts can also advise on spares and tooling recommendations. Although the Field Training Program is primarily focused on line maintenance, CTEC instructors can also provide guidance during engine changes and certain repairs.

Contact [cts.scheduling@ae.ge.com](mailto:cts.scheduling@ae.ge.com) for program availability and specific offerings.

## Test Cell for New Operators

This course targets new and experienced test cell operators, using the GE90-115B performance deck for discussion in the classroom, as well as simulated test cell runs in the test cell lab. Test Cell for New Operators is designed to provide students with the ability to operate the engine through standard test parameters, utilizing the ASE 2000 data system and test console. This highly interactive simulated test cell environment allows the student to experience real-time engine performance parameters, providing the experience of reacting to test cell anomalies and emergency situations while burning no fuel and presenting zero risk to an engine asset. The course is split between classroom lectures covering engine familiarization; console orientation and test cell orientation and correlation; and hands-on exposure to our state-of-the-art test cell simulator.

# Course and Service Matrix

Engine Model(s)	General Familiarization	Advanced Engine Systems	Line Maintenance	Flight Line Troubleshooting	Borescope for Inspectors	Borescope Blade Blend	Engine Removal & Installation	Fan Stator Removal & Installation	
CFM56-2/F108	•		•		•	•			
CFM56-3	•	•	•		•	•			
CFM56-7	•	•	•	•	•	•	•		
CF34-3A1/3B B/J R/J	•		•	•	•				
CF34-8C	•		•		•		•		
CF34-8E	•		•		•		•		
CF34-10E	•		•	•	•		•		
CF6-80E	•		•		•	•			
CF6-80C2 PMC			•		•	•			
CF6-80C2 FADEC	•		•	•	•	•			
CF6-80C2/K1F/L1F			•		•	•			
CF6-50 Commercial/Military	•		•		•	•			
GE90-115B	•		•	•	•	•		•	
GE90-94B	•		•	•	•	•		•	
GENx-1B	•		•		•	•	•	•	
GENx-2B	•		•		•	•	•	•	
GE Honda HF120	•		•		•				
GE M601			•						
T700			•		•				
CT7	•		•		•				
F404/F414	•		•		•				
F110	•								

	Engine Fan Split	Module Removal & Installation	3-Module Removal & Installation	10-Module Removal & Installation	Hot Section Removal & Installation	Cold Section Maintenance	Engine Top Case	Thrust Reverser System	Intermediate Maintenance Course	Minor Refurbishment
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# GENX™

A culmination of more than 60 years of inspired engine design, the GENx turbofan engine refines the best technologies and systems of our most successful family members, the GE90 and CF6 engines. Designed to power a new generation of aircraft, the GENx has evolved from a strong heritage of ingenuity, commitment and dedication to excellence. The engine of the future is here, ready to make its mark in our proud legacy of aviation history.

# GENx Courses



## GENx-1B/-2B General Familiarization

This ATA 104 level I course is available on CD-ROM and is a prerequisite, to be completed at the student's home base, before attending Line Maintenance. This course is an academic training session designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM GENx General Familiarization Course is approximately 4.0 hours.*

## GENx-1B/-2B Line Maintenance

5 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel with glass cockpit, high-bypass engine and English language experience.

## GENx-1B/-2B Borescope for Inspectors

2 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel responsible for borescoping the GENx-1B engine.

## GENx-1B/-2B Engine Removal & Installation

2 days                      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed to provide the information necessary to remove and install a GENx engine. The course also provides hands-on practice for GENx-1B engine removal and installation.

## GENx-1B/-2B Fan Stator Removal & Installation

3 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel. This class is only 13.0 hours (2 days) when combined with the Line Maintenance Course due to courseware overlap.

## GENx-1B/-2B Module Removal & Installation

15 days                      Class size: 10

This ATA 104 level IV course is a practical training session designed for shop personnel responsible for module removal and installation on the GENx-1B engine. The GENx-1B Fan Stator Removal and Installation Course may be added to this training program as required by the customer.

## GENx-1B/-2B Borescope Blade Blend\*

1 day                              Class size: 4

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. Subject matters will include blade blend procedures, use of borescope blend equipment and application of the maintenance manual for the GENx series engine.

*Prerequisite: Borescope Inspection Course or experience with borescope inspection.*

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.

# GE90<sup>®</sup>

Advanced, reliable and efficient, the GE90 is the most powerful commercial jet engine in the world—holding the records for steady-state thrust and for powering the longest non-stop commercial flight in history. With highly developed propulsion technology infused in every feature of the engine, the GE90 is helping long-haul, long-range widebody aircraft fly farther, faster and more cost effectively.

## GE90 General Familiarization

This ATA 104 level I course is available on CD-ROM and is a prerequisite, to be completed at the student's home base, before attending Line Maintenance. This course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM GE90 General Familiarization Course is approximately 4.0 hours.*

*Available for GE90-94B and GE90-115B engine models.*

## GE90 Line Maintenance

5 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session, designed for line maintenance mechanics and supervisory personnel with glass cockpit, high-bypass engine and English language experience. Course length can be adjusted for personnel who do not meet these requirements.

*Available for GE90-94B and GE90-115B engine models.*

# GE90 Courses



## GE90 Borescope for Inspectors

1 day                      Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel. The course consists of specific academic information to analyze internal engine defects. The hands-on portion of this course consists of removal and replacement of engine borescope plugs, use of borescope equipment and use of maintenance manuals.

*Available for GE90-94B and GE90-115B engine models.*

## GE90 Fan Stator Removal & Installation

3 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel. This course requires a minimum of six students.

*Available for GE90-94B and GE90-115B engine models.*

## GE90 Module Removal & Installation

15 days                      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed for shop-level mechanics and supervisory personnel for the GE90. Other key personnel may attend as required. The course consists of those procedures necessary for module removal and installation. Emphases are given to the subjects of: use of special tooling, module preparation for shipment/receipt, use of engine manuals and precision measurements. The course begins with classroom academics to prepare the student for engine maintenance. The specific model engine assigned to a class may vary with the customer's model engine.

*Available for GE90-94B and GE90-115B engine models.*

## GE90 Flight Line Troubleshooting\*

2 days                      Class size: 8

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of academic lecture on basic troubleshooting principles as well as the latest engine-line trends and common faults. Proper use of troubleshooting manuals will also be discussed. The hands-on portion of the course allows the technician to practice finding faults that have been introduced to a training engine using multimeters and troubleshooting manuals.

*Prerequisite: GE90 Line Maintenance Course or equivalent.*

## GE90 Borescope Blade Blend\*

1 day                      Class size: 5

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of hands-on blade blend procedures on GE90 series engines. The hands-on portion of this course consists of borescope blend equipment and use of maintenance manual.

*Available for GE90-94B and GE90-115B engine models.*

*Prerequisite: Borescope Inspection Course or experience with borescope inspection.*

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.



# CF6<sup>®</sup>

For more than 35 years, the CF6 family of engines has established an impressive operational record, providing a baseline for developing GE's next generation of commercial and military engines. The CF6 family is the cornerstone for powering widebody aircraft across the globe.

## CF6 General Familiarization

These ATA 104 level I courses are available on CD-ROM and are prerequisites, to be completed at the student's home base, before attending Line Maintenance. These courses are academic training sessions, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM CF6 General Familiarization Course is approximately 4.0 hours.*

*Available for CF6-50, CF6-80C2 FADEC and CF6-80E engine models.*

## CF6 Line Maintenance

4 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel. The course consists of specific academic information on engine airflows, engine systems, component identification, and fault analysis. The hands-on portion of this course consists of removal and replacement of select engine components, engine rigging (if applicable) and use of maintenance manuals.

*Available for CF6-50, CF6-80A, CF6-80C2 PMC, CF6-80C2 FADEC and CF6-80E\* engine models.*

*\*CF6-80E training offered only at the ATRC training center in Doha, Qatar.*

## CF6 Module Removal & Installation

10 days                      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed for shop-level mechanics and supervisory personnel for the CF6 series engine. Other key personnel may attend as required. The course consists of those procedures necessary for module removal and installation. Emphases are given to the subjects of: use of special tooling, module preparation for shipment/receipt, use of engine manuals and precision measurements. The course begins with classroom academics to prepare the student for engine maintenance. The specific model engine assigned to a class may vary with the customer's model engine.

*Available for the CF6-80C2 engine model only.*

# CF6 Courses



## CF6 Module Removal & Installation

20 days      Class size: 12

This ATA 104 level V course is an academic and practical training session designed for shop-level mechanics and supervisory personnel for the CF6-80C2. Other key personnel may attend as required. The course consists of those procedures necessary for disassembly of the engine into major modules, and continued disassembly of each module into sub-assemblies and selected part-pieces, along with the reassembly of modules and final engine assembly to be accomplished with recommended procedures and equipment. Most areas of the engine will be disassembled, or partially disassembled. Exceptions include: the High-Pressure Compressor (HPC) Rotor/Stator assemblies and Accessory Gearbox Module (AGB). High-Pressure Turbine (HPT) Rotor and HPC Rotor assembly balancing will not be performed. HPC and HPT rotor indexing may be performed if time permits. The course begins with classroom academics to prepare the student for engine maintenance. The engine used for any specific course may be configured to PMC or FADEC models.

*Note: The CF6-80C2 CTEC engine does not have the new R88DT HPT rotor assembly.*

*Available for the CF6-80C2 engine model only.*

## CF6 Engine Fan Split

5 days      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed for shop or line personnel responsible for separating the CF6-80C2 engine for air shipment. Other key personnel may attend as required. The special self-erecting gantry tooling will be used to remove the fan module from the engine assembly. Fan and core assemblies will be placed in their respective shipping stands. The course includes the use of manual procedures, split engine tooling and proper dimensional checks and torques.

*Available for the CF6-80C2 engine model only.*

## CF6 Borescope Inspection

2 days      Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel. The course consists of specific academic information to analyze internal engine defects. The hands-on portion of this course consists of removal and replacement of engine borescope plugs, use of borescope equipment and use of maintenance manuals.

*Available for CF6-50, CF6-80A, CF6-80C2, and CF6-80E engine models.*

## CF6 Borescope Blade Blend\*

1 day      Class size: 5

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course includes hands-on instruction in the proper use of borescope blade blending equipment and practical demonstration of blending procedures for the CF6 series of engines.

*Prerequisite: CF6 Borescope Inspection Course or experience with borescope inspection.*

## CF6 Thrust Reverser System

1 day      Class size: 10

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel. The course consists of specific academic information to analyze thrust reverser defects. The hands-on portion of this course consists of removal and replacement of thrust reverser components and use of maintenance manuals.

*Available for CF6-50, CF6-80A, CF6-80C2 PMC, CF6-80C2 FADEC and CF6-80E engine models.*

## CF6 Flight Line Troubleshooting\*

2 days      Class size: 8

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of academic lecture on basic troubleshooting principles as well as the latest engine-line trends and common faults. Proper use of troubleshooting manuals will also be discussed. The hands-on portion of the course allows the technician to practice finding faults that have been introduced to a training engine using multimeters and troubleshooting manuals.

*Prerequisite: CF6 Line Maintenance Course or equivalent.*

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.

# CF34<sup>®</sup>

Aircraft readiness, on-time departures, reliability, flexibility and cost-effective operation are all important measures of a successful regional aircraft engine. The CF34 family delivers on all fronts with the most reliable engine in the history of regional aviation. CF34 engines also provide the power for business jet service on the Bombardier Challenger 604/605 aircraft.

## CF34-3 General Familiarization

This ATA 104 level I course is available on CD-ROM. This course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM CF34-3 General Familiarization Course is approximately 4.0 hours.*

## CF34-3 Line Maintenance

4 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session, designed for line maintenance mechanics and supervisory personnel with cockpit, high-bypass engine and English language experience. Course length can be adjusted for personnel who do not meet these requirements.

## CF34-3 Borescope for Inspectors

2 days                      Class size: 8

This ATA 104 level III course is an academic and practical training session, designed for line or shop personnel responsible for borescoping the CF34-3 engine.

## CF34-3 Hot Section Removal & Installation

3 days                      Class size: 6

This ATA 104 level III course is a practical training session, designed for shop personnel responsible for module removal and installation on the CF34-3 engine.

## CF34-3 Cold Section Removal & Installation

2 days                      Class size: 6

This ATA 104 level III course is a practical training session, designed for shop personnel responsible for compressor rotor repairs on the CF34-3 engine.

## CF34-8 General Familiarization

This ATA 104 level I course is available on CD-ROM. This course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM CF34-8 General Familiarization Course is approximately 4.0 hours.*

*Available as separate courses for the CF34-8C and CF34-8E engine models.*

# CF34 Courses



## CF34-8 Line Maintenance

3 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session, designed for line maintenance mechanics and supervisory personnel with high-bypass engine and English language experience. Course length can be adjusted for personnel who do not meet these requirements.

*Available as separate courses for the CF34-8C and CF34-8E engine models.*

## CF34-8 Borescope Inspection

2 days                      Class size: 8

This ATA 104 level III course is an academic and practical training session, designed for line or shop personnel responsible for borescoping the CF34-8 engine.

*Available as separate courses for the CF34-8C and CF34-8E engine models.*

## CF34-8 Engine Removal & Installation

1 day                      Class size: 12

This ATA 104 level IV course is an academic and practical training session, designed for line or shop personnel.

*Available as separate courses for the CF34-8C and CF34-8E engine models.*

## CF34-8 Cold Section/Hot Section Maintenance

4 days                      Class size: 10

This ATA 104 level IV course is a practical training session, designed for shop personnel responsible for compressor rotor repairs and hot section replacement on the CF34-8 engine.

## CF34-8 Thrust Reverser Maintenance

1 day                      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed for line or shop personnel responsible for maintaining the CF34-8 thrust reverser.

*Available as separate courses for the CF34-8C and CF34-8E engine models.*

## CF34-10E General Familiarization

This ATA 104 level I course is available on CD-ROM. This course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM CF34-10E General Familiarization Course is approximately 4.0 hours.*

## CF34-10E Line Maintenance

3 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session, designed for line maintenance mechanics and supervisory personnel responsible for the CF34-10E engine.

## CF34-10E Engine Removal & Installation

1 day                      Class size: 12

This ATA 104 level IV course is a classroom and practical training session designed for line or shop personnel responsible for the CF34-10E engine.

## CF34-10E Thrust Reverser Maintenance

1 day                      Class size: 12

This ATA 104 level IV course is an academic and practical training session designed for line or shop personnel responsible for maintaining the CF34-10E thrust reverser.

## CF34-10E Borescope for Inspectors

2 days                      Class size: 8

This ATA 104 level IV course is an academic and practical training session designed for line or shop personnel responsible for borescoping the CF34-10E engine.

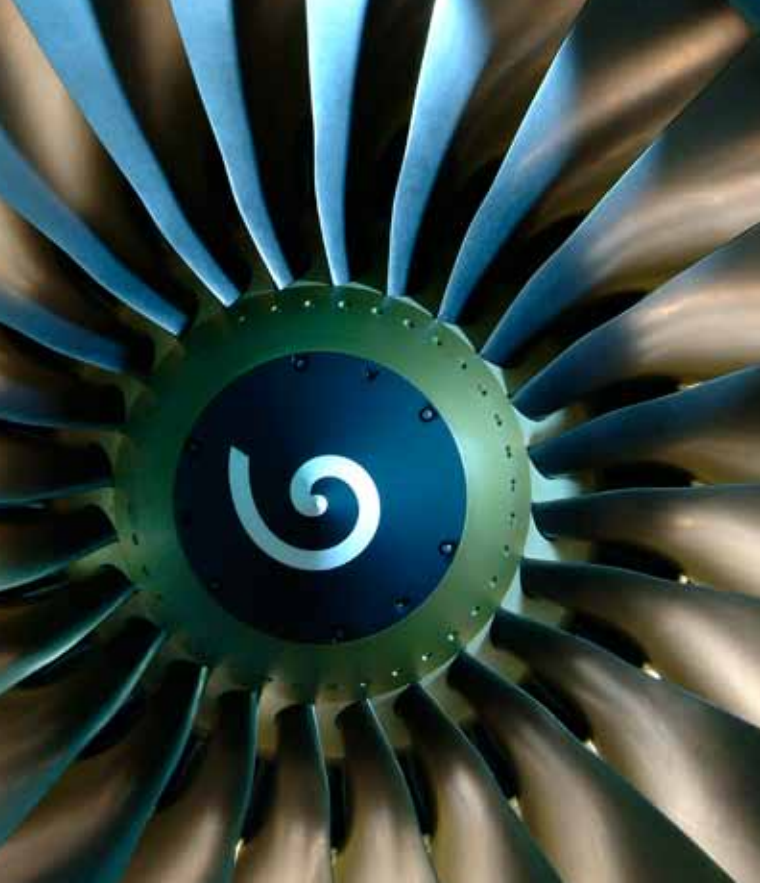
## CF34 Flight Line Troubleshooting\*

2 days                      Class size: 8

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of academic lecture on basic troubleshooting principles as well as the latest engine-line trends and common faults. Proper use of troubleshooting manuals will also be discussed. The hands-on portion of the course allows the technician to practice finding faults that have been introduced to a training engine using multimeters and troubleshooting manuals.

*Available for CF34-10E and CF34-3 engine models.*

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.



# CFM

After more than 30 years, CFM International still serves today as the finest example of a successful international joint company. The CFM family of engines combines the resources, engineering expertise and services of Snecma and GE Aviation. CFM's rugged single-stage architecture is the most durable and efficient in the industry, and has enabled CFM to emerge as the preferred engine in every market it serves.

## CFM56 General Familiarization

This ATA 104 level I course is available on CD-ROM. This course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM General Familiarization Course is approximately 4.0 hours.*

*CD availability: CFM56-7, CFM56-3, CFM56-2.*

## CFM56 Line Maintenance

4 days                      Class size: 12

This ATA 104 level III course provides the information necessary to perform engine line maintenance. The course also provides hands-on practice in the removal and installation of Line Replaceable Units at CTEC.

*Available for CFM56-7, CFM56-3 and CFM56-2 engine models.*

## CFM56 Advanced Engine Systems

4 days                      Class size: 12

This ATA 104 level IV course provides the information necessary to understand the engine systems and aircraft interface philosophies. This course is recommended for instructors, engineers and those needing instruction in theory and philosophies. No LRUs are performed.

*Available for CFM56-7 and CFM56-3 engine models.*

*Prerequisite: General Familiarization or Line & Base Maintenance Course recommended.*



THE POWER  
OF FLIGHT

CFM International is a 50/50 joint company between GE and Snecma.

# CFM Courses



## CFM56 Ten-Module Removal & Installation

15 days      Class size: 12

This ATA 104 level IV course provides the information necessary to understand the engine assembly and disassembly process. This course is recommended for shop overhaul of the CFM56 engine. Course agenda covers removal and installation of the LPT Module, Core Module, Fan and Booster, No#1/2 bearing support, AGB, TGB and IGB removal. Course also covers disassembly and assembly of the HP core module. Course does not cover disassembly and assembly of individual engine components.

*Available for CFM56-7 and CFM56-3 engine models.*

*Prerequisite: General Familiarization or Line & Base Maintenance Course recommended.*

## CFM56 Three-Module Removal & Installation

5 days      Class size: 10

This ATA 104 level IV course provides the information necessary to understand the engine assembly and disassembly process. Course agenda covers removal and installation of the three major modules—LPT, HP core and fan module. This course is recommended for shop overhaul of the CFM56 engine. Course does not cover disassembly and assembly of individual engine components or the core module.

*Available for CFM56-7, CFM56-3 and CFM56-2 engine models.*

*Prerequisite: General Familiarization or Line & Base Maintenance Course recommended.*

## CFM56 Basic Borescope for Inspectors

2 days      Class size: 6

This ATA 104 level IV course provides the information necessary to understand the basic borescope inspection of the CFM56 engine. This course is recommended for non-experienced borescope inspectors and quality personnel.

*Available for CFM56-7, CFM56-3 and CFM56-2 engine models.*

## CFM56 Borescope Blade Blend\*

1 day      Class size: 4

This ATA 104 level IV course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of blade blend procedure on the CFM56-7 series engine. The hands-on portion of this course consists of borescope blend equipment and use of maintenance manuals.

*Available for CFM56-7, CFM56-3 and CFM56-2 engine models.*

*Prerequisite: CFM56 Borescope Inspection Course or experience with borescope inspection.*

## CFM56 Engine Removal & Installation

2 days      Class size: 6

This ATA 104 level IV course is an academic and practical training session designed to provide the information necessary to remove and install a CFM56 engine. The course also provides hands-on practice for CFM56-7 engine removal and installation.

*Available for the CFM56-7 engine model only.*

## CFM56 Engine Top Case

4 days      Class size: 6

This ATA 104 level IV course is an academic and practical training session designed to provide the information necessary to remove and install the stator cases and perform HPC blade replacement on a CFM56 engine.

*Available for CFM56-7, CFM56-3 and CFM56-2 engine models.*

## CFM56 Flight Line Troubleshooting\*

2 days      Class size: 8

This ATA 104 level III course is an academic and practical training session designed for line maintenance technicians and supervisory personnel. The course consists of academic lecture on basic troubleshooting principles as well as the latest engine-line trends and common faults. Proper use of troubleshooting manuals will also be discussed. The hands-on portion of the course allows the technician to practice finding faults that have been introduced to a training engine using multimeters and troubleshooting manuals.

*Available for the CFM56-7B engine model only.*

*Prerequisite: CFM56 Line Maintenance Course or equivalent.*

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.

# CT7/T700

The CT7/T700 is the most widely used engine in its class, powering more than 20 types of rotary and fixed-wing aircraft for nearly 130 customers in 60 countries. Designed for minimal maintenance, the family is also renowned for unmatched ruggedness, safety and reliable operation under the most adverse environmental conditions.

## CT7 General Familiarization

This ATA 104 level I course is an academic training session, designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM CT7 General Familiarization Course is approximately 4.0 hours.*

*Available for CT7-5/7/9 engine models.*

## CT7 Line Maintenance

5 days                      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel with glass cockpit, turboprop/turboshaft engine and English language experience. Course length can be adjusted for personnel who do not meet these requirements.

*Available for CT7-5/7/9 and CT7-2/6/8 engine models.*

## CT7 Borescope for Inspectors

2 days                      Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel responsible for borescoping the CT7 engine and blade blending/clipping procedures. This class can be consolidated with the CT7 Line Maintenance Course due to courseware overlap.

*Available for CT7-5/7/9 and CT7-2/6/8 engine models.*

# CT7/T700 Courses



## CT7 Intermediate Maintenance Course

10 days      Class size: 10

This ATA 104 level IV course is a practical training session designed for shop personnel responsible for module removal and installation on the CT7 engine.

*Available for CT7-5/7/9 and CT7-2/6/8 engine models.*

## CT7 Minor Refurbishment Workscope

3 days      Class size: 10

This ATA 104 Level IV course is a practical training session designed for shop personnel for power restoration, power turbine removal, hot section replacement, and compressor cleaning.

*Available for CT7-5/7/9 and CT7-2/6/8 engine models.*

## T700 Line Maintenance

5 days      Class size: 12

This ATA 104 level III course is an academic and practical training session designed for line maintenance mechanics and supervisory personnel with glass cockpit, turboshaft engine and English language experience. Course length can be adjusted for personnel who do not meet these requirements.

## T700 Borescope for Inspectors

2 days      Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel responsible for borescoping the T700 engine and blade blending/clipping procedures. This class can be consolidated with the T700 Line Maintenance course due to courseware overlap.

## T700 Intermediate Maintenance Course

10 days      Class size: 10

This ATA 104 level IV course is a practical training session designed for shop personnel responsible for module removal and installation on the T700 engine.



# F404

The performance and reliability of F404 engines have set the standards for modern fighter engines, most notably aboard the U.S. Navy F/A-18 Hornet. This family powers a variety of aircraft for a broad range of missions—from low-level attack to high-altitude interception—and boasts widespread application on both afterburning and non-afterburning applications.

# F414

The F414 is the U.S. Navy's newest and most advanced production fighter engine. It combines the proven reliability, operability and maintainability of its successful F404 predecessor with a series of advanced technologies for a 35% power increase. Ongoing technology upgrade programs continue to demonstrate thrust growth and further reductions in cost of ownership.

# F404/F414 Courses



## F404 Engine Familiarization/Line Maintenance

5 days            Class size: 12

This ATA 104 level III course is an academic and practical training session that provides an overall examination of the engine. The course is for anyone requiring basic knowledge of the engine, as well as mechanics, technicians, supervisors and managers. The course includes the location and identification of major modules, rotating parts and stationary hardware in each of these modules. In-depth examination of the airflow through the engine is included with an emphasis on how airflow is controlled and used in an engine. The hands-on section covers standard maintenance practices, use of technical pubs, removal and installation, instructor-selected LRUs and engine borescope inspection procedures.

## F404 On-Site Engine Familiarization

3 days            Class size: 12

This ATA 104 level I course is an academic and practical training session that provides an overall examination of the engine. The course is for anyone requiring basic knowledge of the engine, as well as mechanics, technicians, supervisors and managers. The course includes the location and identification of major modules, rotating parts and stationary hardware in each of these modules. In-depth examination of the airflow through the engine is included with an emphasis on how airflow is controlled and used in an engine. This course is conducted at the customer's location.

## F404 Borescope for Inspectors

2 days            Class size: 6

This ATA 104 level IV course is an academic and practical training session designed for line or shop personnel responsible for borescoping the F404 engine and blade blending procedures. This class can be consolidated with the F404 Engine Familiarization/Line Maintenance Course due to courseware overlap.

## F414 General Familiarization/Line Maintenance

5 days            Class size: 12

This ATA 104 level III course is an academic and practical training session that provides an overall examination of the engine. The course is for anyone requiring basic knowledge of the engine, as well as mechanics, technicians, supervisors and managers. The course includes the location and identification of major modules, rotating parts and stationary hardware in each of these modules. In-depth examination of the airflow through the engine is included with emphasis on how airflow is controlled and used in an engine. The hands-on portion covers standard maintenance practices, use of technical pubs, removal and installation, instructor-selected LRUs and engine borescope inspection procedures.

## F414 On-Site Engine Familiarization

3 days            Class size: 12

This ATA 104 level I course is an academic and practical training session that provides an overall examination of the engine. The course is for anyone requiring basic knowledge of the engine, as well as mechanics, technicians, supervisors and managers. The course includes the location and identification of major modules, rotating parts and stationary hardware in each of these modules. In-depth examination of the airflow through the engine is included with emphasis on how airflow is controlled and used in an engine. This course is conducted at the customer's location.

## F414 Borescope for Inspectors

2 days            Class size: 6

This ATA 104 level IV course is an academic and practical training session designed for line or shop personnel responsible for borescoping the F414 engine and blade blending procedures. This class can be consolidated with the F414 Engine Familiarization/Line Maintenance Course due to courseware overlap.

# F110

The undisputed engine-of-choice for the most advanced F-16 fighters, the F110 engine is rapidly gaining global popularity for the twin-engine F-15 application. The Service Life Extension Program infuses technologies from our proven commercial applications to deliver both significant operating and support cost improvements and longer time on wing.



## F110 General Familiarization

Class size: 4–12

This ATA 104 level I course is designed to provide academic instruction on the F110-100 engine in order to familiarize customers with the engine's turbo machinery and its systems. In-class exercises are performed so that customers are able to identify and explain major assemblies, components, controls and external tubing on the engine.

*Available for F110-100, F110-129 and F110-132 engine models.*

## F110 Intermediate Maintenance

Class size: 4–8

This ATA 104 level III course is designed to provide experienced propulsion maintenance technicians with knowledge, skills and experience to disassemble, inspect, repair and reassemble the GE F110-100 engine while utilizing applicable support equipment. Training will be conducted to the level necessary to allow students to perform complete I-level tasks, troubleshoot possible system faults and restore the unit and major assemblies/subassemblies to a completely serviceable and operational condition as prescribed by applicable maintenance data. Training will include combinations of formal classroom instruction and hands-on exercises to provide appropriate knowledge and skill proficiency. Class is conducted at CTEC or on-site at the customer's location.

*Available for F110-100, F110-129 and F110-132 engine models.*

## F110 Borescope Inspection

1 day                      Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel responsible for borescoping the engine.

## F110 Test Cell Operations

Class size: 2–4

This ATA 104 level IV course is designed to provide academic instruction and hands-on experience to install an F110-100 engine on the test stand, perform the necessary engine run and remove the tested engine. The course also covers the user maintenance requirements on the test cell. Class is conducted on-site at the customer's location.

*Available for F110-100, F110-129 and F110-132 engine models.*

Course lengths vary; contact GE Aviation for specific information.

# HF120

Born from the combined experience and technological proficiency of GE and Honda, the HF120 turbofan engine from GE Honda Aero Engines sets the stage for next-generation business jet power. The HF120 was engineered with a determined and well-defined goal: anticipate and fulfill the future needs of business jets. Today, the HF120 demonstrates enhanced efficiency and power across all levels of performance.



## HF120 General Familiarization

This ATA 104 level I course is available on CD-ROM and is a prerequisite, to be completed at the student's home base, before attending Line Maintenance. This course is an academic training session designed for personnel who require a general knowledge of the basic engine construction features, airflows, engine systems and accessories.

*Normal time to complete the CD-ROM HF120 General Familiarization Course is approximately 4.0 hours.*

## HF120 Line Maintenance

3 days                      Class size: 8

This ATA 104 level III course is an academic and hands-on training session designed for line maintenance mechanics and service station personnel with English language experience.

## HF120 Borescope Inspection

1 day                        Class size: 6

This ATA 104 level III course is an academic and practical training session designed for line or shop personnel responsible for borescoping the engine.

## GE Honda Aero Engines

GE Honda Aero Engines LLC is a 50/50 joint company owned by General Electric Company and Honda Aero, Inc.

# GE M601

Since its debut in 1975, the M601\* turboprop engine family has attained 17 million flight hours on more than 30 aircraft types. The GE M601E-11, in particular, is the workhorse version of the proven M601 series engine for use in agricultural and utility aircraft applications. With no hot section inspection requirement and an internal fuel slinger free of recurrent fuel nozzle maintenance, both the M601E-11 and M601E-11A engine models provide distinct cost-of-ownership advantages over competing engines.

\*Formerly known as the Walter M601 engine.



## GE M601E Line Maintenance\*

2 days      Class size: 12

*Course Description:* This course is an academic and practical training session designed for line maintenance mechanics and aircraft operators. This is an ATA Level III course with detailed engine operation understanding and maintenance associated with basic aircraft operation. All classes will be taught in English.

*Course Objectives:* Understanding of engine design and instruction on the following subjects: Inspections, layout and operation, engine airflow, oil system and components, fuel system and components, exhaust system, reduction gearbox, air inlet, compressor section, power turbine section, combustion chamber, engine maintenance practices, general troubleshooting.

*Who should attend:* Mechanics and operators who wish to gain a detailed level of understanding of the M601E operation along with physical removal and installation of LRUs.

\*This course may be purchased at the current training rate. For course scheduling, email [cts.scheduling@ae.ge.com](mailto:cts.scheduling@ae.ge.com).

# Powerplant Engineering\*

In this course, experienced design and analysis authorities discuss the common and unique design features and philosophies of GE, CFMI and competitor aircraft engines. The intent is to have decision makers in engine management better understand why the instructions and publications for continued airworthiness contain specific material.

## **There are ten topics that cover different specialties of engine design:**

- Preliminary Engine Design
- Static Structures Design
- Fan and Compressor Aero Design
- Compressor and Fan Mechanical Design
- Combustor Aero Design
- Turbine Aero Overview
- Turbine Mechanical Design
- Bearings and Seals Design
- Controls
- Nacelle and Externals

## **There are two discussion topics on specific engine management practices:**

- Life Management
- Data Analysis to Improve Fleet Performance

## **There is also a historical discussion of the evolution of the turbine engine:**

- The Whittle Unit to the Ultra-High-Bypass Engine is discussed during this course. Topics are not specific to a particular engine model and include, but are not limited to, the CT7, CF6, CFM56, CF34, CFE738, GE90, GP7000, GEnx and competitors' engines.

## **The discussion leaders are all experienced leaders in the technical field on which they lecture. These lectures include experts from GE's:**

- Airline Support Engineering
- Design Centers of Excellence
- Chief Engineer's Office

Class size is tailored to customer demand and the course is typically conducted twice a year during the September-to-November time frame.

For more information, contact your GE Customer Support Manager. If you do not have a CSM, please contact the Customer Support Center at 877.GEAE.CSC (432.3272).

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.



# Diagnostics\*

5 days      Class size: 10

GE Diagnostics provides an advanced suite of tools that enhances a customer's Engine Condition Monitoring experience. These tools were developed in cooperation with several of GE's customers to assure that they work in a way that complements an operator's work environment. This five (5) day course provides the Customer with hands-on training of the Diagnostics tool suite. Additionally, it develops an understanding of trend Interpretation principles and its application to line maintenance troubleshooting. The class days are broken out as follows:

## Days 1-2: Diagnostics Tool Usage

**Customer Reports** – Build queries and reports that can be scheduled to execute in time for large sets of data and plots to be available for analysis when you need them.

**Engine Change Submittal** – Remove/install engines and download current configuration for an entire fleet.

**Fleet Manager** – View engine alerts and performance data to make alert dispositions. It also allows for watch list creation for follow up assessments and actions.

**FleetVue** – View real time aircraft/engine status including faults and other reports.

**Flight Coupon** – Web-based tool that can be used as primary or backup method of entering flight data into the GE system.

**GE Reports** – Download fixed format reports provided by GE.

**Plotting** – Plot single or multiple engines and parameters over time and export data for analysis. Interact with the plot to enhance specific areas.

## Days 3-5: Trend Interpretation

During this period, a student who has a background in gas turbine engines will learn how to read and interpret trends in order to analyze the interactions of various operating parameters. This will permit the student to then develop a root cause analysis for the shifts noted. The student will then learn how to apply this information to take action on the flight line for root cause confirmation.

\*This course is not eligible for use of training credits allowance. This course must be purchased at the current training rate.



# e-Learning/Digital Training

To meet the increasing customer demand for training and to help customers reduce engine cost of ownership, GE has developed new on-demand digital training products to deliver vital maintenance information directly to the maintainer. Contact your GE Customer Service Manager to place an order.

## e-Learning/Digital Training Course

### EFAM

These electronic familiarization courses (e-Fam) provide classroom content on engine architecture and systems via the Web or CD. This enables GE to provide genuine OEM training to eligible customers who don't have the opportunity to come to our Training Centers. For most product lines, these courses are now prerequisites for any subsequent training at training centers.

### DIGITAL TRAINING AIDS (DTAs)

Digital Training Aids are designed to provide the mechanic with information about specific maintenance procedures that have been linked to critical errors. This interactive learning allows the user to view procedures step-by-step or as a continuous video. The cautions surrounding critical steps are highlighted and summarized and the user is tested on these critical steps upon completion.

The CDs come in two versions and should be used on a PC. The new web version is intended to be loaded on the customer's internal intranet for the training of employees in support of GE/CFM engine lines.

### CUSTOMER LEARNING MANAGEMENT TOOLKIT (CLMT)

Contact your GE Customer Service Manager for access to CLMT. This program allows direct access to GE training information, so that the customer training coordinator can register students for instructor-led classes, and permits customer personnel to undertake online training with online access to the entire GE Library of Digital Training Solutions.

### Using the CLMT, the customer training coordinator can:

- Access training schedules
- Register students for classes
- Review training records and entitlements (if applicable)

## CTEC University\*

This new and enhanced website will be a central repository for GE's customers and employees to obtain a full array of CTEC training and course materials. This will eliminate the use of multiple sites for eFams, newsletters, DTAs, Computer-Based Trainings (CBTs), etc., and ensure the latest materials are being utilized and referenced.

For GE employees, this site will offer significant training enhancement by providing on-demand answers to training needs.

For our customers, this new site will enable a "one-stop-shopping" experience with all training materials now visible to them, via eFAMS, newsletters, DTAs, CBTs, etc.

## Computer-Based Training (CBT)

To meet the increasing customer demand for training and to help customers reduce engine cost-of-ownership, GE has developed new on-demand digital training products to deliver vital maintenance information directly to the maintainer. CBT can be delivered as a stand-alone DVD or launched through GE LMS or customer server.

### Benefits:

- Interaction when you need it, so you can participate at your convenience
- Provides academic training equivalent to instructor-led courses
- Reduced travel and living costs
- Simple to use
- Improved productivity
- Ideal for refresher training

For more information on this training product, please contact your Customer Support Manager or send your inquiry to [cts.scheduling@ae.ge.com](mailto:cts.scheduling@ae.ge.com).

\*Online training and training material for GE's customers will be available based on each customer's General Terms Agreement (GTA)/contract rights.

# Training Newsletters

Contact your GE Customer Service Manager for orders and subscriptions.

## Training Newsletters

A GE CTEC jet engine instructor who specializes in a particular engine family writes each engine family newsletter with information related to procedural changes, system improvements and reliability issues. These instructors have access to and knowledge of the current and emerging issues affecting customers.

## Contact Information

Your GE Customer Service Manager can assist you with acquiring any of the courses, services and products presented in this catalog. If you do not have a CSM, contact the Customer Support Center (CSC).

## Customer Support Center

877.GEAE.CSC (432.3272)

## Contact information

CTEC  
123 Merchant Street  
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F +1.513.552.2777  
[cts.scheduling@ae.ge.com](mailto:cts.scheduling@ae.ge.com)  
[www.ge.com/aviation](http://www.ge.com/aviation)  
[www.geaviation.com/services/ctec/index.html](http://www.geaviation.com/services/ctec/index.html)

# Class Costs

Our primary training mission is to provide classroom and hands-on instruction to airline customers who own and operate GE Aviation and CFM International products. Customers must have a General Terms Agreement (GTA) or other service support contracts allowing them to be eligible to attend training courses.

The GTA or other support agreements will specify if a customer is eligible to receive identified training at no cost and, if so, assign a number of training credits. These credits are usually in units of student days and are deducted based on the length of the course and number of students attending. For example, two students attending a five-day course would deduct 10 student-day credits from the customer's training entitlements.

Customers who have used all their training entitlements, or those whose contract allows for receipt of training but does not provide training credits, may purchase courses at the current training rate.

Some selected courses are not eligible for training credit use. All customers must purchase such courses at the current training rate. Any courses that are not eligible for training credit use will be marked with an asterisk in the previous pages.

For information regarding training eligibility, training credits or current training rate, please contact your GE Customer Support Manager (CSM). If you do not have a CSM, please contact the Customer Support Center at 877.GEAE.CSC (432.3272).



# Innovative Global Customer Training Solutions



## Hands-On

- Direct engagement with engine components and systems



## Technical

- ATA level I-IV training available
- Line Maintenance, Module, Troubleshooting and Inspection procedures offered



## Support

- At-the-customer field training available
- OEM subject matter experts accessible online or by phone



## Digital

- Computer-based and multimedia training available
- Online class registration and catalog



## Global

- Training locations in the United States, France, Qatar and China
- On-site and field training available



## Value

- Digital and streamlined learning for higher retention
- Customized offerings
- Technical training newsletters
- Emphasis on product reliability



+1.877.432.3272 (within the U.S.)  
+1.513.552.3272 (outside the U.S.)  
[ge.com/aviation](http://ge.com/aviation)  
[geaviation.com/services/ctec](http://geaviation.com/services/ctec)

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