



**Pilot Training**

# **EC155 (ATP / Initial Type Rating)**

**16 Days**

**Ground School**

**Sim**

**54 Hours (8 Days)**

**15 Hours**

**AIRBUS**



## **SCOPE:**

This course will provide a pilot Ground Instruction and Simulation Instruction for the EC155 helicopter. Classroom instruction, combined with flight simulation, will provide information for a thorough review of the aircraft and the knowledge needed to conduct normal flight activities and response to an aircraft emergency or system failure.

## **OBJECTIVE:**

To teach the PT the fundamental knowledge of the aircraft necessary to conduct safe and efficient ground, pre-flight and flight procedures in the EC155. The PT will be able to list the aircraft limitations, describe the functions and operations of the aircraft's systems, use the Flight Manual to obtain necessary information for safe and efficient operation of the aircraft, including knowledge of the aircraft charts necessary for safe and efficient operations. To provide the PT with training and experience in the basic flight characteristics of the EC155 with emphasis on conducting normal flight activities and responding appropriately during an aircraft emergency or system failure. The pilot in training will obtain the knowledge, skill and aeronautical experience necessary to meet the requirements for an airline transport pilot certificate with a rotorcraft category and helicopter class rating.

## **COURSE PREREQUISITES:**

Acceptance into this course is based upon these requirements:

- A current FAA issued Helicopter Pilot Certificate
- Valid Medical Certificate

In special circumstances any of the above requirements may be waived with the approval of Airbus Helicopters, Inc.'s Chief Flight Instructor.

**NOTE:** For customers conducting initial training who operate an aircraft with an FMS other than the UNS-1, Airbus Helicopters, Inc. strongly recommends, after completion of simulator training, at least one training flight at their location in their aircraft to familiarize their pilots with their specific instrument approach procedures.



**Ground School** 54 hours

**WELCOME AND IN-PROCESSING** 1.0 hour

SCOPE: This block of instruction will cover registration and orientation to the course, and an explanation of the course outline.

**AIRCRAFT OVERVIEW** 1.75 hours

SCOPE: The general overview will include the main characteristics, description, main dimensions, airframe reference points, the engine, the main components and systems, the cockpit layout of the helicopter and the helicopter operating publications. This will include a Rotorcraft Flight Manual review of chapters 1 and 3 thru 6.

**FLIGHT MANUAL** 3.5 hours

SCOPE: This block of instruction will cover the flight manual in depth, with emphasis on updating procedures, flight manual layout, and practical of the flight manual as it relates to normal and emergency procedures, performance planning, weight and balance, and optional equipment.

**INDICATING AND RECORDING SYSTEMS** 3.1 hours

SCOPE: This block of instruction will cover an orientation of the warning panel (7 alpha), caution advisory display (CAD), the vehicle and engine multifunction display (VEMD), and other system displays (fuel, hydraulics, electrical, etc.)

**FUSELAGE** 1.6 hours

SCOPE: This block of instruction will cover the general design and layout of the fuselage

**MAIN ROTOR DRIVE** 1.6 hours

SCOPE: This block of instruction will cover the main gearbox design and installation, drive, lubrication, monitoring and emergency procedures associated with the main gearbox.

**MAIN ROTOR** 1.0 hour

SCOPE: This block of instruction will cover the main rotor system, including the spheriflex design and components, blade design, and monitoring of the main rotor speed.



## **TAIL ROTOR DRIVE SYSTEM**

0.5 hour

SCOPE: This block of instruction will cover the components of the tail rotor drive shaft, the tail rotor gearbox, lubrication and monitoring.

## **TAIL ROTOR**

0.6 hour

SCOPE: This block of instruction will cover the components and operation of the tail rotor “fenestron”, including emergency procedures associated with the tail rotor system.

## **FLIGHT CONTROLS**

1.25 hour

SCOPE: This block of instruction will cover the basic flight control installation for the EC-155, including the relationship with the hydraulic systems, servos, and automatic flight control system (AFCS).

## **HYDRAULIC SYSTEM**

1.75 hours

SCOPE: This block of instruction will cover the EC-155 hydraulic systems, both main and emergency and the relationship with the servos and landing gear operations. Included will be instruction on normal operations, monitoring of the systems, malfunction recognition, and emergency procedures relating to potential malfunctions or failures of the hydraulic system.

## **SERVO CONTROLS**

1.3 hours

SCOPE: This block of instruction will cover the main servos and yaw servos for the EC-155. This will include aerodynamic functions of each servo, basic operation of the servo, monitoring, and malfunction recognition. Review of the emergency procedures relating to servo control malfunctions will be covered at the end of this presentation

## **LANDING GEAR**

2.45 hours

SCOPE: This block of instruction will cover the EC-155 landing gear system, including basic operations, monitoring, potential malfunctions and failures (hydraulic and electric), and emergency procedures relating to landing gear malfunctions.

## **FUEL**

1.6 hours

SCOPE: This block of instruction will cover the fuel supply system for the EC-155, including basic installation of the fuel cells, basic operations of all components, monitoring of the fuel system, and potential malfunctions within the systems. Emergency procedures relating to fuel system malfunctions will be covered.



## **ELECTRICAL**

3.4 hours

SCOPE: This block of instruction will cover the EC-155 electrical system, installation, component location and function. Additionally, operations of the electrical system from a pilot's perspective will be covered, including normal operations, system redundancy, and emergency procedures in case of malfunctions or failures.

## **ENGINE AND COMPONENTS**

4.0 hours

SCOPE: This block of instruction will cover the EC-155 power plant including installation, lubrication system, and monitoring of normal parameters, and power check procedures. Starting, shutdown, and normal procedures will cover in addition to emergency procedures relating to engine and system related malfunctions.

## **FIRE PROTECTION**

1.8 hours

SCOPE: This block of instruction will cover installation and monitoring of the engine and airframe fire detection and suppression system for the EC 155. This will include component location, monitoring, system malfunction, and emergency procedures pertaining to engine or airframe fire and/or excessive heating of the cargo area.

## **HEATING AND VENTILLATION**

1.2 hours

SCOPE: This block of instruction will cover the heating, ventilation, and air-conditioning systems installed on the EC 155. Included will be normal operations of these systems, monitoring, and emergency procedures associated with the air-conditioning and heating systems.

## **MISCELLANEOUS EQUIPMENT**

1.6 hours

SCOPE: This block of instruction will cover systems and equipment not previously covered earlier in the presentation. This may include, but is not limited Pitot static systems, HUMS, Wipers, or other equipment installed.

## **LIGHTING**

1.4 hours

SCOPE: This block of instruction will cover the internal and external lighting systems found on the EC155, including basic and customized lighting. Normal operations, lighting checks and any emergencies related to the lighting systems will be included.

## **NAVIGATION / COMMUNICATION EQUIPMENT**

1.0 hour

SCOPE: This block of instruction will cover the navigation and communication equipment installed on the EC155, including normal operations, preflight checks and any emergencies related to the navigation and communication systems will be included.

**FCDS**

2.0 hours

SCOPE: This block of instruction will cover, from a pilot's perspective, the EC 155 AFCS as it relates to the autopilot system. This will include basic installation, location and function of the AFCS autopilot components, and its use. Additionally, some of the basic display and operations of the autopilot where it helps to explain the overall functionality of the FCDS. This module will concentrate on the FCDS displays and malfunction/failures associated with the will be covered.

**AFCS**

3.7 hours

SCOPE: This block of instruction will cover, from a pilot's perspective, the EC 155 autopilot system. This will include basic installation, location and function of the autopilot components, preflight test procedures and monitoring of the autopilot. Additionally, operations of the basic autopilot, coupling of the upper modes, limitations, displays on the SMD45's and malfunction/failures associated with the AFCS will be covered.

**GARMIN / UNIVERSAL – AVIONICS**

3.0 hours

SCOPE: This block of instruction will cover variant specific avionics systems, for example Garmin vs. Universal differences, if required by student.

**PERFORMANCE AND PLANNING**

1.6 hours

SCOPE: This block of instruction will cover performance charts, power check charts and weight and balance calculations for the EC 155.

**START-FLY-SHUTDOWN**

1.0 hour

SCOPE: This block of instruction is very interactive with the PT, as the starting checklist is covered in its entirety. Take-off, flight, approach, and shutdown procedures and profiles are also covered.

**PREFLIGHT**

1.2 hours

SCOPE: This block of instruction will cover the preflight inspection of the EC155. Utilizing the RFM checklist as well as a classroom multimedia, the PT will be led through an entire preflight to include systems review.

**LIMITATIONS QUIZ AND FINAL EXAM**

3.5 hours



## Flight Training

15 hours

### Flight 1: Basic introduction to the EC155

1.5 hours (FSTD)

Objective: The PT will demonstrate knowledge on completing the daily pre-mission planning and aircraft performance charts. The PT will be introduced to the cockpit of the EC155 and familiarized with switches and controls. The PT will demonstrate basic knowledge of starting and shutting down the aircraft utilizing the aircraft. This flight will include a VFR airport-to-airport scenario encompassing the following tasks.

- a) Performance Planning and Limitations
- b) Check of Weight and CG
- c) Cockpit Management
- d) Use of Checklists
- e) Normal Start-up Procedures
- f) Engine Power Check
- g) Taxi (limited for first flight)
- h) Before Takeoff Checks
- i) Normal takeoff and landing procedures
- j) Flight controls and typical helicopter response
- k) CPDS/FCDS environment
- l) RPM HIGH Introduction
- m) Rejected Landing
- n) Normal Shutdown procedures
- o) Emergency Egress

### Flight 2: Introduction to the AFCS with Aircraft Emergencies

1.5 hours (FSTD)

Objective: The PT will be will continue to work on the specific tasks associated with startup/shutdown procedures using the checklist and basic VFR flight maneuvers with and without the AFCS. A multi-point VFR flight scenario will be completed using the AFCS leveraging the different modes. During this flight the PT will be introduced to limited emergency procedures such as hydraulic and landing gear failures. This flight will include the following items:

- a) Normal Startup Procedures
- b) Normal Taxi (Scope increased from first flight but still limited)
- c) Hover Power Check
- d) VFR Flight Procedures
- e) AFCS including emphasis on the sync. mode
- f) Effectiveness of the beep-trim (attitude-1°/beep>40kt)
- g) AFCS upper modes
- h) Un-stabilized (SAS)
- i) Emergency procedures including hydraulic and landing gear failures
- j) Settling with Power
- k) Autorotation with Power Recovery

**AIRBUS**



### **Flight 3: Normal Procedures, OEI & TR Emergency Procedures**

1.5 hours (FSTD)

Objective: During this flight the PT will be introduced to engine failures in cruise flight and during approach and departure. This flight will include I a VFR flight scenario to the training destination with where they will be introduced to run on landings to provide them the skill sets to handle a T/R control failure. This flight will include the following items:

- a) Normal Startup Procedures
- b) Normal Taxi and VFR Flight Procedures
- c) Taxing
- d) Hovering including the use of Trim
- e) Rejected T/O
- f) AEO Takeoff and Running Landing
- g) T/R Fail
- h) Engine Fire
- i) RPM HGH - Review
- j) OEI In Flight with Landing
- k) OEI on Approach with Flyaway
- l) OEI on Approach with Landing
- m) Normal Shutdown Procedures

### **Flight 4: Normal Procedures & Continued OEI Training**

1.5 hours (FSTD)

Objective: This flight continues the PT's OEI training (AP, Cruse, Approach and Landing). During this flight the PT will continue their training on other emergency produces such as electrical system and AP malfunctions. During this flight the PT should start to build their SPRM skills by prioritizing tasks and leveraging the AFCS to off load some of the work during an emergency.

- a) Normal Startup Procedures
- b) Normal Taxi and VFR Flight Procedures
- c) Taxing
- d) OEI on Takeoff to Fly and Landing
- e) OEI On Approach to Flyaway and Landing
- f) AFCS Failures
- g) Electrical Failures
- h) T/R Failures including Autorotation
- i) Normal Shutdown procedures





### **Flight 5: VFR Flight with Power Check & Various System Failures**

1.5 hours (FSTD)

Objective: During this flight the PT will concentrate on SPRM skills and mastering their overall VFR flight skills. The PT will concentrate on various departure and approach techniques including landing gear, hydraulic, AP and T/R failures. This flight allows the PT & instructor to concentrate on any remaining VFR or aircraft skills that are not yet up to the “Perform” level of ATP standards before moving onto IFR skills.

- a) Normal Startup Procedures
- b) Taxi Procedures
- c) Normal VFR Flight Procedures
- d) Engine Power Check
- e) Varied Takeoff and Landing Profiles (Shallow, Steep, Confined etc.)
- f) Landing Gear & Hydraulic Failures
- g) AFCS Failures
- h) SAS Failures
- i) Electrical Failures
- j) Normal Shutdown procedures

### **Flight 6: IFR Flight and Various Engine Failures and Fire**

1.5 hours (FSTD)

Objective: This flight will introduce the PT to IFR flight within controlled airspace utilizing the AFCS to two local airports using both precision and non-precision approaches including holding. This flight includes OEI work with an in-flight restart, as well as governor malfunctions. This flight will also include a rejected landing. During this flight the PT will concentrate on using the AFCS as much as possible to reduce their workload and should start to show mastery of all of the appropriate AFCS upper modes.

- a) Normal Startup Procedures
- b) Taxi Procedures
- c) Normal IFR Flight Procedures
- d) Fuel Transfer with Engine Failure in flight with Restart
- e) Rejected Landing
- f) FADEC / Governor Malfunctions
- g) Cabin Fire
- h) Precision
- i) Non-Precision Approach
- j) Holding
- k) Normal Shutdown procedures



### **Flight 7: IFR Night Flight with Various AP and Display Failures**

1.5 hours (FSTD)

Objective: This flight will concern a test on IFR flight within controlled airspace utilizing the AFCS to two local airports using both precision and non-precision approaches with various malfunctions on approach as well as OEI after the FAF. The PT will be exposed to various FCDS, CPDS and AHRS failures. The intent of these failures is to prepare the PT to be able to fly a full uncoupled approach.

- a) Normal Startup Procedures
- b) Clearance
- c) Taxi Procedures
- d) Normal IFR Flight Procedures (4 Axis and 3 Axis Use)
- e) FCDS, CPDS, AHRS failures in cruise flight
- f) SAS Failure
- g) STAR
- h) Full Precision coupled (4 Axis) and non-coupled
- i) Engine failure during a precision approach after the FAF to landing
- j) Normal Shutdown procedures

### **Flight 8: IFR Flight with AFCS/FCDS and T/R failures**

1.5 hours (FSTD)

Objective: This flight is IFR flight within controlled airspace utilizing the AFCS to two local airports using both precision and non-precision approaches. Including a missed approach and hold. The PT will be introduced to a static system failure which might facilitate decoupling of the AFCS. This malfunction is an excellent way to introduce the risks of IFR helicopter flight without an AFCS and the potential for unusual attitudes. This flight includes the following items:

- a) Normal Startup Procedures
- b) Clearance
- c) Taxi Procedures
- d) Normal IFR Flight Procedures (4 Axis and 3 Axis Use)
- e) SID
- f) Unusual Attitude Recovery
- g) Static System Failure
- h) Full Precision Approach
- i) Non-Precision Approach
- j) Engine failure on approach with flyaway
- k) Missed Approach (OEI)
- l) Holding
- m) Landing from Approach
- n) Normal Shutdown procedures



**Flight 9: IFR Flight including Precision & Missed Approach**

1.5 hours (FSTD)

Objective: This final IFR flight is intended on filling in any gaps in the PT's current IFR skill set. The PT will be allowed to practice precision, non-precision and missed approaches partial panel and at the discretion of the instructor may include any other VFR or IFR skill the PT needs further practice on. This flight will include the following items:

- a) Normal Startup Procedures
- b) Clearance
- c) Taxi Procedures
- d) Normal IFR Flight Procedures (4 Axis and 3 Axis Use)
- e) Partial Panel
- f) Full Precision and VTR Non-Precision Approach
- g) Missed Approach (OEI)
- h) Holding
- i) Landing from an Approach
- j) Normal Shutdown Procedures

**Flight 10: End-of-Course Evaluation (TCE Administered)**

1.5 hours (FSTD)

Synopsis: The Training Center Evaluator will administer an end-of-course evaluation in accordance with PTS FAA-S-8081-20. The evaluation will include an oral exam which will successfully be completed prior to the flight. The flight portion will include VFR and IFR flight operations with emergencies. The evaluation will include all required tasks as identified in ATP helicopter PTS FAA-S-8081-20 Change 2.