PERFORMANCE-BASED NAVIGATION (PBN) OVERVIEW COURSE

COURSE DESCRIPTION
This course provides a high level overview of the Performance-based Navigation (PBN) concept and principles. PBN represents a shift from sensor-based to performance-based navigation. PBN routes and procedures are designed to meet a navigation specification which is defined in terms of accuracy, integrity, availability, continuity and functionality for the proposed operations in the context of a particular airspace.

Because PBN implementation impacts all areas (aircraft operations, regulatory approvals and authorizations, training, instrument flight procedure design, airspace design, aircraft separation, etc) understanding the PBN concept and principles becomes essential for all aviation stakeholders. Therefore, this course is the necessary pre-requisite to understand PBN and for further PBN training.

COURSE OBJECTIVES
• Explain the PBN concept
• Develop a common understanding and foundational PBN knowledge to serve as the basis for future, in-depth PBN courses.
• Explain the PBN benefits, components and navigation specifications
• Explain PBN implementation

TARGET POPULATION
• Aircraft Operations Personnel, Pilots and Dispatchers
• Air Traffic Control Officers (ATCO’s)
• Airline and Airport Personnel
• Air Navigation Service Providers (ANSP) and Civil Aviation Authorities (CAA)
• Any aviation stakeholder interested in understanding the principles of PBN

ASSOCIATED DOCUMENTS
• ICAO Performance-based Navigation PBN Manual 9613
• ICAO The Use of Performance-based Navigation in the Airspace Design Doc 9992

FORMAT: Online
DURATION: 2 to 4 hours
LANGUAGE: English
PRICE: US$100
COURSE DESCRIPTION
The PBN concept represents a shift from sensor-based to performance-based navigation. The PBN concept requires that the aircraft meets certain airworthiness certification standards to be eligible for a particular PBN application and that the airline operator has operational approval from an appropriate regulatory body before the system can be used. A PBN operational approval is an approval that authorizes an operator to carry out defined PBN operations with specific aircraft in designated airspace.

The goal of this course is to help air transport operators and regulators understand the PBN concept, the requirements and the regulatory process for a PBN operations approval.

COURSE OBJECTIVES
• Understand the PBN Concept.
• Understand the PBN specifications.
• Understand what a PBN Operations Approval is.
• Understand the documentation required for submission.
• Understand the process that both the operator and regulator will follow.

TARGET POPULATION
• Civil Aviation Authorities (CAA)
• Airline Personnel

PREREQUISITES AND QUALIFICATION REQUIREMENTS
Understanding of the existing operations approval regulatory process and have knowledge of ICAO Performance-based Navigation (PBN) Operational Approval Manual Doc 9997.
PERFORMANCE-BASED NAVIGATION (PBN) AIRSPACE DESIGN COURSE

COURSE DESCRIPTION
The PBN concept represents a shift from sensor-based to performance-based navigation. PBN offers significant advantages over the current sensor specific method which uses ground based navigation aids to design more efficient airspace, ATS routes, instrument flight procedures with vertical guidance and obstacle clearance criteria. It allows for more efficient and flexible use of airspace - route design and placement, resulting in increased aircraft fuel efficiency and reduced noise impact. Personnel involved in airspace design need to understand the PBN concept and how it can be used to improve an existing airspace structure.

The goal of this course is to provide participants with application of PBN in the design of airspace.

COURSE OBJECTIVES
• Understand the PBN Concept.
• Understand how the PBN Concept can improve airspace efficiency and capacity. Understand who needs to be involved with the airspace design.
• Conduct actual design of an existing airspace using the PBN concept.

TARGET POPULATION
Personnel involved with Airspace Planning and Design, including:
• Airspace Planners
• Procedure Designers
• Airline Operators
• ATM Operations Managers
• Air Traffic Controllers
• Regulators

ASSOCIATED DOCUMENTS
• ICAO Performance-based Navigation PBN Manual 9613
• ICAO The Use of Performance-based Navigation in the Airspace Design Doc 9992
• ICAO Continuous Descent Operations (CDO) Manual Doc 9931
• ICAO Continuous Climb Operations (CCO) Manual Doc 9993

FORMAT: Online
DURATION: 2 to 4 hours
LANGUAGE: English
PRICE: US$100
PERFORMANCE-BASED NAVIGATION (PBN) FOR PILOTS COURSE (PBNFP-TRG)

COURSE DESCRIPTION
PBN concept introduces a set of aircraft and aircrew requirements needed to support performance-based navigation operations within a defined airspace. As an end user of PBN concept, pilots are more involved in the navigation application which includes the navigation specification and the NAVAID infrastructure. PBN is increasingly becoming the normal method of navigation and all pilots need to understand the basic concepts and operational requirements.

This course provides an overview of the Performance-based Navigation (PBN) concept and principles, and provides pilots with guidance on procedures for PBN operations.

COURSE OBJECTIVES
• Explain the PBN concept
• Provide information essential to pilots on how to operate on PBN routes and procedures

TARGET POPULATION
• Commercial and General Aviation Pilots

FORMAT: Online
DURATION: 2 to 3 hours
LANGUAGE: English
PRICE: US$100
COURSE DESCRIPTION:
The implementation of Performance-based Navigation (PBN), is presently the global aviation community’s highest Air Navigation priority. It is also key to the implementation of ICAO’s Aviation System Block Upgrades and an important enabler for Continuous Descent and Continuous Climb operations.

Recently in many states several PBN procedures with advanced functions and options have started to be developed which allow safer access to more airports and improved route efficiencies.

As the number of PBN procedures increase, it also requires changes to the ATCO training to ensure that the air traffic controllers (ATCOs) are aware of the new PBN concept and the on-board RNAV or RNP system capabilities in order to determine whether the performance of the RNAV or RNP system is appropriate for the specific airspace requirements.

To this end, ICAO with guidance from the International Federation of Air Traffic Controllers’ Associations has developed Performance-based Navigation ATCO online course to provide all necessary information with respect to PBN and airspace concept, flight plan and new charting standards, training requirements, mixed mode operations and implementation guidance.

COURSE OBJECTIVES:
At the completion of this e-learning course you will be able to examine the:

• Fundamental concepts of PBN
• Airspace Concept and its components
• Role of ATC in the development of Airspace Concept
• Use of PBN in ATS routes and instrument flight procedures

TARGET POPULATION:
Air navigation service providers, air traffic service providers and individual Air Traffic Controllers with guidance from the International Federation of Air Traffic Controllers’ Associations.
FOR INFORMATION ON THE PERFORMANCE-BASED NAVIGATION ONLINE COURSES

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)
Email: aviationtraining@icao.int  |  Web: www.icao.int/training