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CIVIL AVIATION ACADEMY

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Sanothimi, Bhaktapur

Syllabus

Of

Flight Operation Officer/Flight Dispatcher (FOO/FD) Basic Course

First Revision

January 2025

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Flight Operation Officer/Flight Dispatcher (FOO/FD)

Introduction

Flight Operations Officers/Flight Dispatchers (FOOs/FDs) play a crucial role in ensuring the safe, efficient, and compliant operation of commercial flights. They work to support pilots, ground staff, and air traffic control. They coordinate flight plans, monitor aircraft status and address operational issues. Ground training for Flight Operations Officers is an essential part of their preparation for a career in the aviation industry. It provides the knowledge and hands-on experience needed to manage flight operations, ensure safety, and respond to unforeseen challenges. Ultimately, well-trained FOOs contribute significantly to the overall success of flight operations and the safety of air travel. Through a combination of theoretical knowledge and practical training, this course prepares students for the dynamic and challenging environment of flight operations, making them valuable assets to any aviation organization and the Graduates will be ready to pursue roles in airlines, cargo operations, and other sectors of the aviation industry.

Aim:

The aim of the course is to train individuals to become qualified professionals who can ensure the safe, efficient, and smooth operation of flights by providing essential pre-flight and in-flight support to the flight crew and airline operations.

Objectives:

Upon completion, participants will be able to:

- Understand flight operation fundamentals
- Create Flight Plans
- Calculate fuel requirement
- Plan and monitor flight operations
- Prepare load sheet and trim sheet
- Determine weight and balance of the aircraft
- Assess weather conditions and interpret METARs, TAFs, and other weather reports.
- Ensure compliance with flight routes, airspace restrictions, and international regulations.
- Present the aeronautical information and weather briefings to the pilots.
- Ensure safety and regulatory compliance
- Demonstrate extensive knowledge and skill to perform the role of flight dispatcher.
- Perform teamwork and communicate with the cockpit crew, ATC and ground operations teams
- Coordinate with emergency procedures such as diversions, fuel shortages, and technical malfunctions.

Target Population

This course is designed for aspiring individuals, both national and international, who are looking to start a career in aviation as flight operations officers or flight dispatchers.

Prerequisite:

- Must hold at least a higher secondary school certificate or equivalent.
- Must be at least 21 years old.





- Must be capable of speaking, reading, writing, and understanding the English language.
- Must be physically and mentally fit, certified by a qualified physician.

Note:

- 1. Serving personnel from the armed forces and government departments, intended to enroll in FOO/FD Course, must provide a No Objection Certificate from the relevant organization.
- 2. Participants with a recommendation letter from any aviation organization will receive priority for enrollment.

No. of Participants:	10 to 16.		
Course duration:	250 hours (10 week	s, 5 days per week)	
Attendance:	90 %		
Pass Standard:	70 %	. 50 ^{- 1}	
Language of Instruction:	English		

Training Fee:

- a. For foreign participants, the fee for a batch of up to 10 participants is US \$ 35000.00 (Thirty five thousand US dollars, including VAT). For any additional participants, the fee is US \$ 3000.00 per participant, also inclusive of VAT.
- b. For Domestic participants, the fee for a batch of up to 10 participants is NPR. 2260000.00 (Two million two hundred sixty thousand Nepalese rupees, including VAT). For any additional participants, the fee is NPR. 2260000.00 (Two lakhs twenty-six thousand Nepalese rupees, also inclusive of VAT).
- c. If the batch demands to include both domestic and foreign trainees, the fee per participant will be adjusted based on the batch fee for up to 10 participants, as outlined in points (a) and (b) above.
- d. Fees are waived for CAAN employees, if nominated by CAAN.

Training Strategy:

The ground training for Flight Operations Officers/Flight Dispatchers typically involves a mix of classroom instruction complemented by practical exercises, case studies, field visits, and group activities to enhance practical skills and mirroring real-world flight operations, helping trainees to acquire skill in decision-making and problem-solving. To enhance learning outcomes, the program includes guest lectures from industry professionals.

Certification:

a. Participants who achieve the minimum passing standard in each module will receive a 'Certificate of Successful Completion'.





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Certification:

- a. Participants who achieve the minimum passing standard in each module will receive a 'Certificate of Successful Completion'.
- b. Participants who do not achieve the minimum passing standard in each module examination will be given one additional opportunity to take a supplementary exam.
- c. Those who do not meet the minimum pass standard, even in supplementary, will not be eligible to obtain any Certificate.

References:

- Chicago Convention (ICAO Doc. 7300.)
- ICAO Annexes and ICAO Docs.
- Civil Aviation Regulation
- AIP Nepal
- Personnel Licensing Requirements
- Civil Airworthiness Requirements
- Flight Operation Requirements.
- Manual of Air Traffic Services
- ATS Operation Manual.
- Air Navigation Manual
- Handouts.



List of Modules

<u>Module</u>	<u>Topic</u> <u>Classroom</u>	/Practical hours
Module - 0	Introduction and Course Orientation	01 hr.
Module-1	Civil Air Law and Regulations	15 hrs.
Module-2	Aviation Meteorology	25 hrs.
Module-3	Navigation Principles and Systems	20 hrs.
Mudule-4	Communications and CNS Systems	18 hrs.
Module-5	Airspace and Air-routes	12 hrs.
Module-6	Airport Operations and Air Traffic Management	20 hrs.
Module-7	Safe transportation of DG by air and emergency procedures	10 hrs.
Module-8	Aircraft Weight and Balance	25 hrs.
Module-9	Aircraft Systems and Performance	30 hrs.
Module-10	Flight Planning and Monitoring	50 hrs
Module-11	Human Factor and Dispatcher Resource Management	10 hrs
Module 12	Security and Safety Management System	10 hrs
	Field Visit	3 brc
	Course Evaluation/Certification and closing	1 hr.
	Total hours	250 hrs



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Details of Modules

Module – 0	Introduction and Course Orientation			01 hr.
Module - 1	Civil Air Law and Regulations	ж. 	÷.	15 hrs.

Module - 1 Civil Air Law and Regulations

- a. Convention of International Civil Aviation The Chicago Convention
- b. The International Civil Aviation Organization (ICAO) and its annexes
- c. ICAO Annexes and subjects specific to Annex 1, 2, 6, 7, 8, 12, 13.
- d. Freedom of Air: Air Transit and Air Transport Agreement
- e. Aviation abbreviations and terminologies
- f. Rules and regulations relevant to the holder of a flight operations officer license, appropriate air traffic services practices and procedures;
 - **Civil Aviation Regulations 2002**
 - Personnel Licensing Requirements (PELR)
 - Flight Operations Requirement (FOR)
 - Aircraft Operator Certification Requirements (AOCR)
 - Nepalese Civil Airworthiness Requirements (NCAR)
 - Manual for Air Traffic Service/(PANs ATM- Doc 4444)
 - Integrated Aeronautical Information Package: AIP, AIP Supplements, NOTAMs, PIB, Checklists
 - AIP Nepal: National regulations and requirements, Air Navigation Charges

Module examination/Evaluation/Debriefing (2 hrs.)

Module - 2Aviation Meteorology

- a. Atmospheric Properties: Pressure, Density, Temperature, Humidity
- b. International Standard Atmosphere (ISA)
- c. Air mass and fronts
- d. Cloud types and its formations
- e. Thunderstorm and aircraft icing
- f. General climatology
- g. Turbulence, Clear Air Turbulence, Jet streams, Wind shear and Micro burst
- h. Met Observation: Graphic and non-graphic weather analysis and Weather Radar
- Aeronautical meteorological reports: METAR, SPECI, TAF, AIRP 1.
- SIGMET, VOLMET, MET briefing for pilots and Forecasts i.
- k. Meteorological service of international air navigation
- Practical Demonstration; 1
 - interpretation and application of aeronautical meteorological reports, charts and forecasts, codes and abbreviations; use of, and procedures for obtaining, meteorological information;
 - make an accurate and operationally acceptable weather analysis from a series of daily weather maps and weather reports

Module examination/Evaluation/Debriefing (2 hrs.)



Module - 3 Navigation Principles and System

a. The Earth: Axis and poles, Latitude and Longitude, Motion of the earth

b True, magnetic and compass direction; tyro heading reference and grid direction

c: Measurements of Distance, Speed (TAS, IAS, GS) and Time

d Triangle of Velocities

e: Sun Rise, Sun Set and twilight calculations

- f. Introduction to chart projection: Mercator charts, Lambert and Polar stereographic projection
- g. ICAO chart requirements: Aired charts and Jeppesen charts
- h. Use of slide rules: computers or scientific calculator
- i. General Principles: Pressure altimeter, VSI, ASI, Mach meter, QFE, QNH, QNE
- j. Introduction to radio navigation and principles of air navigation with particular reference to instrument flight.
- k. Performance Based Navigation (PBN)
- 1. Principal of Operation of Navigation: INS and FMS

Module examination/Evaluation/Debriefing (2 hrs.)

Module – 4 Communication and CNS Systems

18 hrs.

- a. International aeronautical telecommunication service: AFTN, SITA, ARINC
- b. Aeronautical fixed service and mobile service
- c. Aircraft Instruments, Equipment and Flight documents
- d. Communication and Phonetics
- e. Use of Standard Phraseology
- f. ATS Message Handling System
- g. procedures for communicating with aircraft and relevant ground stations
- h. Basic Communication, Navigation and Surveillance (CNS) System in Aviation
 - Communication: HF, VHF, SELCAL, AMHS
 - Navigation: NDB, Locator Beacon, VOR, DME, ILS, MLS, GNSS, RNAV
 - Surveillance: ASR, PSR, SSR, MSSR, Weather Radar
- i. Use and limitations of VHF and HF in ATC and Company communication
- j. Future Systems: SATCOM, AIRCOM, ACARS, ADS
- k. Radio Navigation Aids and System in Nepal

Practical and Demonstration:

Communication and Phonetics, communicating with aircraft and relevant ground stations, ATS Message Handling (2 hrs.)

Module examination/Evaluation/Debriefing (2 hrs.)

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20 hrs



Module – 5 Airspace and Air Routes

- a. Airspace: Airspace Classification, FIR, TMA, CTZ, ATZ
- b. Controlled and Uncontrolled Aerodromes
- c. Prohibited, Restricted and Dangerous area
- d. Departure, Arrival and Approach Procedures: SIDs, STARs and IAPs
- e. Holdings Visual and Instrument holdings
- f. Air-routes: International, Domestic and route map
- g. Route planning and ETOPs Planning

Module examination/Evaluation/Debriefing (2 hrs.)

Module – 6 Airport Operations and Air Traffic Management

- a. Airport Facilities: Runway, Taxiways, Apron, Isolated parking
- b. Aerodrome Markings and Signage, Airfield Lighting Systems
- c. Declared distances: TORA, TODA, ASDA, LDA, Stop ways and clear way
- d. Airport Operation Facilities and Services
- e. Ramp operation and equipment handling
- f. Aerodrome Rescue and Fire-fighting Services
- g. Air Traffic Services: concept, types and area of responsibility
- h. General rules and procedures, Flight rules: IFR, VFR, SVFR
- i. Altimeter setting procedures
- j. ICAO Flight plan, preparation and filing of air traffic services flight plans with Exercise (2 hrs.)
- k. Air traffic incident reporting
- 1. RVSM Policy and procedures
- m. Search and rescue services
- n. emergency flight procedures; procedures relating to aircraft accidents and incidents.
- o. Airport Emergency Plan

Module examination/Evaluation/Debriefing (2 hrs.)

Module - 7 Safe Transportation of Dangerous Goods by air and Emergency Procedures 10 hrs.

- a. Classification of Dangerous Goods
- b. Source documents and Dangerous Goods identification
- c. Dangerous Goods Emergency Manual Procedures
- d. Operational procedures for the carriage of freight and dangerous goods;
- e. General In-flight Emergency and Abnormal Situation and Procedures
- f. Responsibility of Flight Dispatcher for the safe transport of Dangerous Goods
- g. Company Emergency Response Plan

Module examination/Evaluation/Debriefing (2 hrs.)

12 hrs.

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Module - 8 Aircraft Weight and balance

a. Introduction to Weight and Balance

b. Aircraft Weight Terminology: Tare, Basic, OWE, ZFW, MZFW, BRW, Payload

c. Abbreviation and definition - MTOW, MCTM, DOI

d. Traffic Load/Range Limitation

- e. Weight Limitation
- f. Distribution and effect of loading and calculation of the C.G.
- g. Load planning
- h. Moments and Balance
- i. Aircraft Balance and Longitudinal stability
- j. Special Loading including carriage of freight and dangerous goods
- k. Specimen Load message and Load sheet/Trim sheet
- 1. Practical Exercises/Demonstration: (10 hrs./5 hrs. Exercise & 5 hrs. for group presentation)
 - mass and balance calculations
 - Preparation and design of Load sheet and Trim sheet

Module examination/Evaluation/Debriefing (2 hrs.)

Module – 9 Aircraft Systems and Performance

30 hrs.

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25 hrs

- a. Principles of Aircrafts: Aeroplan, Helicopters, Glider
- b. Aircraft Structure and basic components
- c. Basic Aerodynamics: Newton's Law, Bernoulli Principles
- d. Four basic forces: Thrust, Drag, Lift and Weight
- e. Thrust measurements, Lift/Drag ratio
- f. Angle of incidence, Angle of attack, CG and CP
- g. Primary Controls: Aileron, Elevators and Rudder
- h. Secondary Controls: Flaps and Slats, Spoilers and Speed brakes, Trim tab
- i. Aircraft Axes: Equilibrium and Stability
- j. Aircraft motion: Yaw, Pitch, Roll
- k. Aircraft Engines and Power plants: Turboprop and Jet engines
- 1. Aircraft Systems and Flight Operations
- m. Flight Instruments: ASI, HSI, VSI, RMI, SSI, Gyro, EFD, TCAS, GPWS
- n. General Principle and Performance of flight relating to the appropriate category of aircraft: Gross and Net Performance
- o. Aircraft performance and operating limitations of aeroplane power plants, systems and instruments, Aircraft Operations Manual
- p. Phases of flights: Take-off, Climb, Cruise, Descent and Landing
- q. Mandatory, recommendatory and operational performance requirements
- r. Aircraft Speeds: Vmca, Vmcg, V1, VR, V2, V3, green dot, Vref, Vapp
- s. Take off flight path segments
- t. Takeoff and landing weight Limits: Structural, Field, Climb, brake energy
- u. Tare Speed and Obstacle limits
- v. Basic Field Length, Effect of Slope and Wind
- w. Wing loading and load factor





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- x. Engine failure and other inflight abnormalities
- y. Minimum equipment list (MEL), MMEL, DDG, CDG
- z. Helicopter;
 - Helicopter aerodynamics
 - Helicopter Performance
 - · Helicopter Weight and Balance; CG shifts, Load Limits, Lateral CG, Floor Loading Limits

Practical Exercise and Demonstration (5 hrs.)

Module examination/Evaluation/Debriefing (2 hrs.)

Module - 10 Flight Planning and Monitoring

- a. Introduction to Operational flight planning
- b. Use of Circular Slide Rules and Electronic flight calculators
- c. Conversions:
 - Nautical mile, Statue mile, Kilometer,
 - · Feet and meter, and
 - Gallon, Liter, lbs. and kg.
- d. Calibrated Air Speed, True Air speed, Mach number
- e. Interpretation and application of aeronautical meteorological reports, charts and forecasts, codes and abbreviations; use of, and procedures for obtaining, meteorological information.
- f. Pressure Altitude, Density Altitude
- g. Computations of Time, Distance, Speed and Fuel consumption
- h. Solution of Triangle of velocity
- i. Object and methods of flight planning: Detailed format of a flight planning
- j. Route selection: Simple route covering wind drift and component table
- k. Use of aeronautical documentation
- 1. Flight planning:
 - Flight Performance Calculation and Planning Procedures: Climb, Cruise and descent.
 - Fuel Requirement: Trip fuel, Alternate fuel, holding fuel
 - · Sector fuel, Reserve fuel, minimum furl requirement
 - Payload calculation
 - Take-off Performance: Normal and abnormal operations
 - En-route Performance: Normal, on engine inoperative data to restict Max take-off weight due to obstacle en-route
 - · Landing Performance: Landing distance requirement in dry and wet runway
 - Antiskid inoperative operations
 - Calculation of max landing weight
 - Flight Planning exercise:
 - Computerized Flight Planning
 - Climb, Cruise, Descent, Step climb
 - Basic principles of computer-assisted planning systems: Advantages and procedures
 - Concept and calculation of Critical Point (CP) and Point of No Return (PNR)



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- m. Flight Monitoring:
 - Supervision and all other assistance to a flight in actual or simulated adverse weather conditions with Case study technique.

Practical Exercise and Demonstration (15 hrs.)

- weather analysis and briefings
- determine the optimum flight path for a given segment, and manual/computergenerated flight plans
- Demonstration and presentation (by Trainees)

Module examination/Evaluation/Debriefing (2 hrs.)

Module - 11 Human Factor and Dispatcher Resource Management

10 hrs.

- a. Human Factors and Accident
- b. Error, Violations and Safety reporting
- c. Situational Awareness
- d. Effective Communication and Information Handling
- e. Effective Decision Making and teamwork
- f. Concept of Dispatcher Resource Management
- g. Stress, Fatigue and Workload Management
- h. Duties and responsibility of Flight Dispatcher: Individual and Joint with pilot.
- i. Aeronautical factors

Module examination/Evaluation/Debriefing (2 hrs.)

Module - 12 Safety and Security Management

a. Safety Management System (SMS) (5 hrs.)

- Safety Management Fundamentals
 - Safety Policy and Objectives
 - Safety Risk Management
 - Safety Assurance
 - Safety Promotion
- b. Aviation Security (3 hrs.)
 - General principles and procedure
 - Emergency Procedure;
 - Unlawful interference and sabotage of aircraft;
 - Bomb threat

Module examination/Evaluation/Debriefing (2 hrs.)

Field Visit

Course Evaluation/Certification and closing

3 hrs. 1 hr. **Total hours** 250 hrs.