



# **Airline Crew Planning, Pairing and Rostering**

## **Course: FTL and Fatigue Risk Management**



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### **Introduction:**

Airline crew planning, pairing and rostering, with FTL and fatigue risk management, is a 5-day course for crew resource planning, pairing, rostering and fatigue safety teams that ends with a Crew Resource and Fatigue Risk Plan for a growing case airline. Carriers that grow fleets without a crew manpower forecast, efficient pairings and a reserve model face open trips, illegal duties and fatigued crew on early starts and night sectors. Nominees already build pairings, publish rosters or manage crew numbers and work through a modelling build on a case timetable. CoreConcept Training Center delivers this airline crew planning course.

### **Course Objectives:**

- Forecast pilot and cabin crew manpower by fleet, rank and base from block hours, leave, training and attrition for a growing fleet
- Construct legal, cost-efficient crew pairings from a timetable using set partitioning logic, deadhead and layover choices
- Build monthly rosters with bidline, preferential bidding or fair-share methods and measure roster quality and crew satisfaction
- Size standby and reserve crew pools against disruption history so that open trips are covered without excess idle crew
- Apply prescriptive FTL rules on flight duty period, rest, cumulative limits and extensions to pairings and rosters
- Operate an FRMS that uses bio-mathematical fatigue model scores, fatigue reports and safety assurance indicators to control fatigue risk

### **Target Audience:**

- Crew resource planning teams responsible for long-range manpower forecasts, recruitment demand and training seat plans
  - Pairing construction teams responsible for building trips from the published timetable
  - Rostering teams responsible for monthly crew rosters, bids, leave and roster publication
  - Crew scheduling and reserve management teams responsible for standby pools and open trip coverage before the day of operation
  - Fatigue safety action group members responsible for fatigue reports, fatigue model analysis and FRMS assurance
  - Flight operations planning staff responsible for crew rules configuration in crew management systems
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## **Course Outline:**

### **Day 1: Crew Planning Cycle, Cost Drivers and Manpower Forecasting**

- Crew Planning Cycle From Timetable to Published Roster
- Crew Cost Drivers in Block Hours, Duty Pay and Hotels
- Crew Manpower Forecast Model by Fleet, Rank and Base
- Leave, Recurrent Training and Attrition Allowance in Crew Numbers
- Current-State Crew Planning Maturity Scorecard for the Carrier

### **Day 2: FTL Rules, Flight Duty Period Limits and FRMS Principles**

- FTL Flight Duty Period Tables and Reporting Time Bands
- Minimum Rest, Cumulative Flying Limits and Days Off Rules
- Commander Discretion and Unforeseen Circumstance Extension Recording
- FRMS Policy, Fatigue Safety Action Group and Accountabilities
- Circadian Low, Sleep Opportunity and Cumulative Sleep Debt Concepts

### **Day 3: Pairing Construction and Roster Building Methods**

- Set Partitioning Pairing Model With Cost and Coverage Constraints
- Deadhead, Layover and Sit Time Trade-Off Analysis
- Bidline Rostering With Seniority-Ordered Line Awards
- Preferential Bidding System Trip and Days-Off Requests
- Fair-Share Rostering With Duty Equalisation Across Ranks

### **Day 4: Reserve Sizing, Fatigue Models and Roster Risk Controls**

- Standby and Reserve Pool Sizing From Disruption History
- Bio-Mathematical Fatigue Model Scoring of Draft Pairings
- Fatigue Report Triage and Hazard Log Entry
- Back-of-Clock and Early Start Pairing Mitigation Options
- Roster Stability, Change Rate and Crew Satisfaction Metrics

### **Day 5: Modelling Build of the Crew Resource and Fatigue Risk Plan**

- Case Airline Fleet Growth Brief and Timetable Data Pack
  - Case Manpower Forecast and Recruitment Phasing Calculation
  - Case Pairing Set and Reserve Pool Scenario Testing
  - Case Fatigue Score Review and FTL Legality Check
  - Crew Resource and Fatigue Risk Plan Completion and Panel Challenge
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## Skills You Will Gain:

- Crew Manpower Forecasting
- Crew Pairing Optimisation
- Bidline and Preferential Rostering
- Reserve Pool Sizing
- FTL Legality Checking
- Bio-Mathematical Fatigue Analysis
- Fatigue Hazard Logging
- Roster Quality Measurement

## Why Attend This Course:

- Deliver a Crew Resource and Fatigue Risk Plan for a case airline to the director of flight operations or the crew planning committee as a template for fleet growth
- Decide how many crew to recruit by base and rank, which pairings to accept and how large the reserve pool should be for each season
- Avoid open trips, illegal duties, overtime spend and fatigue events caused by late recruitment, thin reserves or poorly timed pairings
- Share the manpower forecast model, pairing cost sheet, reserve sizing template and fatigue report form with planning and safety colleagues

## Conclusion:

Back at work, the participant hands the Crew Resource and Fatigue Risk Plan to the director of flight operations, the crew planning committee and the fatigue safety action group. They use it to approve recruitment and training seat demand for new aircraft, set pairing and rostering rules, agree reserve levels and accept fatigue mitigations for early starts and night sectors. After the first season under the plan, the unit should compare forecast and actual crew numbers, open trips, reserve usage, roster changes and fatigue reports against the plan.

## Frequently Asked Questions FAQ:

### What should participants know before the airline crew planning, pairing and rostering course?

Participants should already work with crew numbers, pairings, rosters or fatigue reports and be comfortable with spreadsheets. Bringing an anonymised timetable extract, a roster sample or a fatigue report summary helps them apply the modelling build to their own operation.

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## **How does airline crew planning, pairing and rostering differ from an operations control or cabin crew course?**

It covers the planning side before the day of operation: manpower forecasts, pairing construction, rostering methods, reserve sizing, FTL rules and FRMS. Operations control courses cover live disruption recovery, and cabin crew courses cover on-board service and safety routines.

## **Why does airline crew planning, pairing and rostering need FRMS as well as FTL limits?**

Prescriptive FTL limits cap duty and flying hours, but a legal pairing can still produce fatigue through early starts, night sectors and lost sleep. FRMS adds data, fatigue model scores and crew reports so that such risks are found and controlled.

## **What do participants take back from the airline crew planning, pairing and rostering course?**

Participants take back a Crew Resource and Fatigue Risk Plan for a case airline, with a manpower forecast model, pairing cost sheet, reserve sizing template, FTL legality checklist and fatigue report triage form ready to adapt to their own fleet and bases.

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