

## Chapter 7a: Airline Schedule Optimization

### Learning Objectives:

- Factors affecting Airline Scheduling Decision
  - Market Demand (all PAX not same),
  - Fleet composition,
  - Location of crews,
  - Maintenance bases,
  - Gate restrictions,
  - Landing slot restrictions, bilateral agreements (International flights)
- Airline Scheduling problem complexity considerations:
  - Problem Size
  - Stochastic nature of demand, pricing and airline operations.
- ‘Sequential’ Airline Scheduling Planning
  - Schedule Design (Class I)
  - Fleet Assignment (Class I)
  - Maintenance Routing (Class II)
  - Crew Scheduling (Class II)
- Basic Fleet Assignment Problem (FAM)
  - Flight Network Diagram
  - Greedy solution, limitation and introduction to Optimization model
  - Space-time Network
    - Flight arc, ground arc
  - Constraints
  - Objective Function
  - Limitations and drawbacks
- Extending Fleet Assignment Problem to IFAM(Itinerary Based)
  - Spilling
  - Recapture
- Schedule Design Optimization
  - Incremental Optimization : Practical considerations when designing airline schedule
  - Hub debanking : Requirements and scope
  - Optimizing Flight retiming and Fleet Assignment