

# Airline Scheduling:

## Demand-Supply

These stages are schedule design, fleet assignment and routing. While schedule design decides the itineraries to offer along with corresponding departure and arrival airport and departure and arrival time; fleet assignment decides the aircraft type to be assigned to each flight. An itinerary in airline literature, as a specific sequence of flights legs in a market (an origin-destination pair), in which first leg originates from the origin airport at a certain time and final leg terminates at the final destination airport at a later time decides the path followed by an aircraft during the planning horizon, taking care of various aircraft maintenance restriction.

In this thesis, we focus on the formulation and solution of problems that can capture some important interactions to improve the performance of scheduling.

Two problems addressed in this thesis are:

1. Demand-Supply Interactions in Schedule Design and Fleet Assignment

2. Robustness in Routing

Understanding of basic concepts relat

Demand is one of the most important aspects for schedule design and fleet assignment stages of airline scheduling. Both these stages try to serve the demand and match the supply with demand as close as possible. These stages require demand estimates for making decisions, but it has also been demonstrated that demand for an itinerary is a function of availability of itineraries, itinerary attributes and capacity offered by the airline in the market. Since demand for an itinerary is a function of availability of itineraries, itinerary attributes and capacity offered by the airline in the market.

itineraries. We use logit-based demand modeling in these scheduling problems. We derive a variant o