



At the **Chair of Operations Management** at **TUM School of Management**, we are looking for interested and qualified students to conduct their

## Master's Thesis

on the following topic:

### Aircraft Rotation Planning With Aircraft Sharing

This thesis considers the introduction of an aircraft sharing concept. By redefining traditional ownership and operational relationships among airlines and aircraft leasing companies, this innovative approach allows multiple providers to access a shared aircraft fleet. As a result, the existing flight network can be redesigned, which may lead to a significant reduction in emissions in the aviation sector. One important step in this reorganization of the flight network is the creation of feasible aircraft rotations. Given the set of weekly flights to be performed in the network and desired departure times of all flights, the planning task is to determine which physical aircraft will operate which flight(s). Various operational constraints need to be taken into account. The objective is to minimize the number of aircraft needed to perform all flights.

#### Your tasks:

- Perform a literature review on existing approaches for the problem (and/or similar problems)
- Based on the results of your review and existing work provided by us, implement at least two methods to solve the problem efficiently
- Using test data provided by us, solve the problem using the methods you have implemented, and compare their performance

#### Requirements:

- Profound knowledge in mathematical optimization
- Familiarity with commercial solvers (Gurobi, CPLEX, or similar)
- Programming experience (preferably Python)
- Affinity to aviation is a plus

**Beginning date:** as soon as possible

**Main supervisor:** Prof. Dr. Rainer Kolisch

**Cooperating company:** Bauhaus Luftfahrt e.V.

**How to apply:** Please follow [this link](#)