At the Chair of Logistics and Supply Chain Management of TUM School of Management we are looking for an interested and qualified student to conduct his/her Project Study or Master Thesis in cooperation with international and interdisciplinary partners from the industry and research institutes.

**Multi-level capacitated lot-sizing problem**

The multi-level capacitated lot-sizing problem is associated to the determination of when and how much of products or semi-finished products should be produced such that setup, production, and holding costs are minimized by taking limited resource capacities and the bill of material structures of the products into account.

This topic is motivated by one of the leading German manufacturing companies in the field of screw production. It is investigated in a research project in cooperation with international and interdisciplinary partners from the industry and research institutes. The aim of this work is to provide an optimization-based tool in order to solve a mid-term production planning problem encountered by our industrial partner.

**Selected tasks:**
- Literature review on the models and solutions methods of the multi-level capacitated lot-sizing problem
- Modeling the problem by the mixed integer linear programming (MILP) approach
- Developing a solution method for the MILP model
- Analyzing the efficiency of the model and the solution method by numerical results based on the real-life data from the company

**Requirements:**
The thesis is suitable for students who have experiences in optimization approaches and are interested in implementing these approaches in the practical problems. A background in one of the MILP optimization packages i.e. Xpress-Mosel is required. The ability to work in a structured and analytical way is important. The thesis should be written in English.

**Begin:** as soon as possible

**Advisor:** Dariush Tavaghof Gigloo ([dariush.gigloo@tum.de](mailto:dariush.gigloo@tum.de))

For more details about the topic, please come and see me in room 1546.

Please send your application together with your curriculum vitae and transcripts of records by email.