Technische Universität München
TUM School of Engineering and Design
Professorship of Laser-based Additive Manufacturing

Student Project – Design & Additive Manufacturing of Custom Bike Components

Overview

Are you passionate about cycling – whether you're chasing speed on a road bike or shredding trails on a mountain bike?
Do you want to combine your engineering creativity with cutting-edge manufacturing technology?
Have you ever dreamed of designing your own high-performance bike parts?

Then this is your project.
We are looking for motivated students to join an interdisciplinary team project focused on the **design and additive manufacturing of custom bicycle components** using **laser-based powder bed fusion of metals (PBF-LB/M)** – one of the most advanced technologies in modern manufacturing.

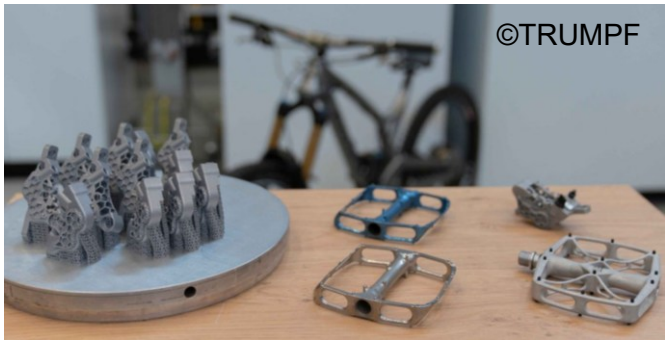
Aim of the project

With PBF-LB/M, **design freedom is virtually unlimited** – organic geometries, internal channels, lattice structures, and lightweight topologies become reality. However, this freedom comes with responsibility: **a deep understanding of the process-specific design guidelines** is essential to ensure manufacturability and performance.

The goal is to **design, optimize, and manufacture custom high-performance bike components** – tailored to real-world cycling demands. Your parts will be:

- Engineered using **CAD and topology optimization tools**
- Manufactured using **laser-based powder bed fusion of metals**
- Installed and tested on **road bikes and mountain bikes**

Possible components include stems, brake mounts, dropout inserts, derailleur hangers, or entirely new innovations – your ideas count!



What's in it for you?

- Get hands-on experience with **one of the most advanced metal 3D printing technologies**
- Learn how to design for additive manufacturing (DfAM) with **real-world constraints and process-specific rules**
- Work in a team of **cycling enthusiasts, designers, and engineers**
- Prototype and test your own components
- Build up a skillset that's in high demand across **aerospace, automotive, medical, and sports industries**

Who should apply?

Students from engineering, industrial design, materials science, or related disciplines.
You don't need prior experience in additive manufacturing – we're looking for curiosity, motivation, and a love for bikes.

Interested?

Then saddle up – this is your chance.

Please send your CV, current transcript of records, and a brief motivation letter to:

Contact Person

Jonas Grünewald, M.Sc.
jonas.gruenewald@tum.de

All applications will be reviewed, and places will then be offered. These must be bindingly confirmed by the students by 28 February 2026.