

MSc. Project

Title:

Advanced topics in computational and experimental biofluid mechanics

Introduction:

No specific topic has been predefined by the supervisors. The aim of the proposal is to allow the student to immerse himself/herself into an advanced fluid mechanical phenomenon of particular interest to the student. The range of phenomena could be, but is not limited to:

- Stability/instability of laminar flow in the transition phase between laminar and turbulent flow
- Turbulence in the cardiovascular system
- Vortex formation and dynamics in the cardiovascular system
- Energy loss in expanding and contracting segments of the vascular system

Opportunities:

We envision that an immersion project of this kind will have three distinct phases:

1. Study of theory
2. Simulation studies, e.g. using Comsol
3. Experimental study, determining flow and pressure in self-made/custom-made 3D-printed flow phantoms with realistic geometries.

Prerequisites:

- Extensive theoretical knowledge in fluid mechanics corresponding to the combined curriculum in courses 31520 and 31524.
- Significant experience in the use of Comsol for the simulation of fluid mechanics.
- Flair for practical lab work with an ability to plan and execute practical experiments.

Supervisors and contacts:

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