Courses in English
Course Description

Department: 06 Applied Sciences and Mechatronics
Course title: Microfluidics and Applications
Hours per week (SWS): 4
Number of ECTS credits: 6

Course objective:
(1) Extend and acquire understanding in physics of fluids for both internal and external flows,
(2) Understand the function, design and manufacturing of micro fluidic devices
(3) Get acquainted with practical implementations of microfluidics in selected application

Prerequisites:
Fundamentals of physics and mathematics corresponding to B.Sc. or B.Eng., fundamentals in microtechnology are helpful but not necessary

Recommended reading:
Will be given at the end of the first lecture.
Example: Nguyen Nam-Thung: "Fundamentals and applications of microfluidics"

Teaching methods:
Lecture with integrated problems, solutions and questions

Assessment methods:
Final exam

Language of instruction:
English

Name of lecturer:
Dr. Karin Bauer and Dr. Gerhard Müller

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Link:
https://www.fb06.fh-muenchen.de/fk/modulbeschreibungen.php?lang_nr=&id=2010

Course content:
(1) Introduction, classification of fluids, basics in thermodynamics and transport phenomena (diffusion, heat transport, viscosity), surface tension, Navier-Stokes equations, Reynolds number, laminar and turbulent flows, fluidic networks, elektrofluidics (optional),
(2) Microchannels, microvalves, micromixers and microreactors, micropumps,
(3) Microdosing, microarrays & biochips, micro total analysis systems (µTAS), aero-mems (optional)

Remarks: