Course Title: Fluid mechanics for Mechanical Engineers

Department: 03 Mechanical, Automotive and Aeronautical Engineering

Course objective: The students get acquainted with terminology and modeling of fluid mechanics including hydrostatics and aerostatics (atmosphere). They become familiar with the elementary rules and their limits of applicability and should be able to apply the basic equations for analyzing and solving given technical flow processes.

Prerequisites: Mathematics, mechanics

Recommended reading: Bruce Munson et al., Fundamentals of Fluid Mechanics, w. CD-ROM, Wiley and sons

Teaching methods: Seminar and lab course

Assessment methods: Written examination 90 minutes (30 min without scripts, 60 minutes with scripts)

Language of instruction: English

Name of lecturer: Prof. Dr. Peter Schiebener

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Course content:
- Introduction to fluid mechanics
- Continuum
- Fluid Statics
- Elementary Fluid Dynamics
  - Bernoulli equation
  - Conservation of mass
  - Conservation of momentum
- Fluid Kinematics
- Finite control volume analysis
- Differential Analysis of Fluid Flow
- Dimensional Analysis, Similitude, and Modeling
- Viscous Flow in Pipes
- Flow over Immersed Bodies
- Open-Channel Flow
- Physical Properties of Fluids

Remarks