Hochschule München University of Applied Sciences

Courses in English
Course Description

Department	05 Building Services Engineering, Paper and Packaging Technology and Print and Media Technology
Course title	**Fluid Mechanics**
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	
Prerequisites	no
Recommended reading	Textbook and handouts
Teaching methods	lectures and exercises
Assessment methods	examination
Language of instruction	English
Name of lecturer	Prof. Dr.-Ing. habil. Dieter Liepsch
Email	Liepsch@hm.edu
Link	
Course content	siehe Anlage
Remarks	

Prof. Dr.-Ing. habil. Dieter Liepsch

Fluid Mechanics

Goal: To extend the physical knowledge in the field of fluid mechanics

Contents:

- **Introduction to Fluid Mechanics**
  - Definition of a fluid-fluid as a continuum.
  - Velocity field, stress field, viscosity.
  - Description and classification of fluid motions.
- **Fluid Static´s**
  - Pressure
  - Hydrostatic force on submerged surfaces
  - Buoyancy and stability
  - Dimensionless number: Reynolds number,
  - Froude-, Mach-, Strouhal-number
- **Basic equations**
  - Conservation of mass
  - Newton´s Second Law
  - The angular momentum principle
  - The first and second law of thermodynamics
- **Motion of a fluid element**
- **Incompressible inviscid flow**
  - Momentum equation for frictionless flow
  - Euler equation
  - Bernoulli equation
- **Internal incompressible viscous flow**
  - Fully developed laminar flow
  - Flow in pipes and ducts
  - Turbulent flow
- **Bounclary layer theory**
- **Turbo machinery**
- **Compressible flow in pipes**
  - Isotherm and adiabat
  - Laval jet
- **Flow measurement (short introdution)**
  - External incompressible viscous flow
  - Flow in open channels
  - Introduction to compressible flow