

COURSE TITLE:	FLUID MECHANICS
Institute/Division:	Institute of Process and Power Engineering / Faculty of Mechanical Engineering
Erasmus subject code:	06.1
Number of contact hours:	60
Course duration:	2 semester
ETCS credits:	5
Course description:	Macroscopic properties of fluids. Kinematics of fluid motion. Eulerian and Lagrangian flow descriptions. Volume and mass rate of flow. The continuity equation. Surface and volume forces. Momentum theorem. Stress and rates of deformation. Constitutive relations. Equations for Newtonian fluids. The Navier – Stokes equations. Dimensional analysis and similitude. Solutions to the steady – state Navier – Stokes equations. The Poiseuille and Couette flows. Inviscid flows. Bernoulli’s equation. Application of Bernoulli’s equation. Viscous flow in pipes. The boundary layer approximation. The boundary layer equations. Turbulent flows and its modeling. Turbulence models. Flow measurements. Instruments and procedures for measurement of flow rate.
Literature:	B. R. Munson, D. Young, T. Okiishi, Fundamentals of Fluid Mechanics, J. Wiley & Sons, W. P. Graebel, Advanced Fluid Mechanics, Elsevier.
Course type:	Lectures, classes
Assessment method:	Exam
Prerequisites:	
Primary target group:	1st year postgraduate Mechanical Engineering students
Lecturer:	
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Deadline for application:	May 31