Course Unit Title	**ME 202 Fluid Mechanics**
Programme of study	BSc in Mechanical Engineering
Lecturer	Dr.-Ing. Paris A. Fokaides
Type of course unit	Compulsory
ECTS	6
Year of study:	2
Semester(s) offered	Spring Semester 2015, 2019, 2021, 2022, 2023, 2025, 2026
Course content	▪ Properties of fluids ▪ Pressure and fluid statics ▪ Fluid Kinematics ▪ Momentum analysis of flow systems ▪ Flow in Pipes
Course modules:	Module 1: Properties of fluids ▪ Density and specific gravity ▪ Vapour pressure and cavitation ▪ Viscosity ▪ Surface tension and capillary effect Module 2: Fluid statics ▪ Barometer and atmospheric pressure ▪ Hydrostatic forces on submerged plane surfaces ▪ Buoyancy and stability ▪ Fluids in rigid-body motion Module 3: Fluid kinematics ▪ Lagrangian and Eulerian description ▪ The Reynolds transport theorem Module 4: Mass, Bernoulli and energy equations ▪ Conservation of mass ▪ Mechanical energy and efficiency ▪ The Bernoulli equation ▪ Energy analysis of steady flows Module 5: Momentum analysis of flow systems ▪ Newton's law and conservation of momentum ▪ Forces acting on a control volume ▪ The linear momentum equation ▪ The angular momentum equation Module 6: Flow in pipes ▪ Laminar and turbulent flows in pipes ▪ Pipping networks and pump selection ▪ Flow rate and velocity measurement Module 7: Fluid Mechanics Laboratory Exercises ▪ Laboratory Exercise 1: Buoyant Forces ▪ Laboratory Exercise 2: Measurement of fluids viscosity - rotary viscometer ▪ Laboratory Exercise 3: Open channel flow - water channel ▪ Laboratory Exercise 4: Volume flow rate measurement - Venturi Tube ▪ Laboratory Exercise 5: Impact of a jet – Linear momentum conservation
Textbooks:	Yunus, A. C., & Cimbala, J. M. (2006). Fluid mechanics: fundamentals and applications. International Edition, McGraw Hill Publication
Instruction language	English
External Reference	link