Program and Degree: **BSc in Aerospace Engineering**	
Course Description	
Course Title	**Fluid Mechanics**
Prerequisites	Differential Equations, Dynamics
The course aims	Students' acquaintance with the principles of fluid static and dynamics, including liquid and gas 1- The ability to mathematical modelling fluid flow 2- Modeling and finding fluid characteristics in stagnation and fluid flow 3- Calculation of the forces on the fluid and the force of the fluid on the objects
Contents	1. Fluid Properties: Fluid Definition, Fluid viscosity, continuum and Physical Properties such as Specific Gravity, Specific Volumes, Pressure, Temperature, Capacity, Vapor Pressure and Surface Tension. 2. Static fluid: Pressure at a point in the fluid, the fluid force enters the flat and curved surfaces, the pressure center, the immersion and floating force, the balance of immersed objects 3. Fluid flow and basic equations: flow characteristics, flow line definition, constant and uniform flow, system concept and control volume, continuum flow along Euler and Bernoulli equations, applied problems in Siphon, Butterfly, Hole, Venturi, Hydraulic jump, propulsion, local drop in cross-sectional change, moment of momentum 4. Dimensional analysis: Dimension, Pi theory, Dimensionless numbers, Euler number, Reynolds number, Mach, Fred, Similarity and model studies 5. Effects of Viscosity and Flow Resistance: A smooth flow between two parallel planes and on a sloping surface, the slow flow developed in the pipe, the boundary layer, the velocity distribution in the turbulent flow, the separation of flow, the drag force, and the friction and flow in the open channels.
Duration	**1 Semester (16 weeks)**
Course Hours	**3 hours/week**
Course Type	**Required**