



Program and Degree: BSc in Aerospace Engineering	
Course Description	
Course Title	Flight Mechanics I
Prerequisites	Aerodynamic I
The course aims	Students' acquaintance with aircraft performance and Guidance
Contents	<ol style="list-style-type: none"> 1- An introduction to Earth Atmosphere: Standard Atmosphere, Air parameters and their dependence with altitude (Pressure, temperature, density, viscosity...) 2- Aircraft Guidance Equations: Aircraft motion in vertical plane, Aircraft external forces (Weight, Thrust, Lift, and Drag). 3- Drag forces: Drag Coefficient, Drag polar, flow separation effect on drag force, Propeller Mechanics. 4- Aircraft Engine and propulsion systems: Piston engines, Jet engines, propeller engines, engine thrust and power variations relative to altitude. 5- Aircraft performance with jet engines: stall speed, maximum speed, flight Range, flight Endurance. 6- Aircraft performance with Propeller engines: stall speed, maximum speed, flight Range, flight Endurance. 7- Aircraft Climb and Descend: Rate of climb, angle of climb, minimum descent angle. 8- Aircraft Takeoff and landing: takeoff and landing equations, Runway calculation, 9- Aircraft Maneuvers
Duration	1 Semester (16 weeks)
Course Hours	3 hours/week
Course Type	Required