



Program and Degree: BSc in Aerospace Engineering	
Course Description	
Course Title	Thermodynamics I
Prerequisites	Differential Equations, physics I
The course aims	<p>Students' acquaintance with the principles of thermodynamics and the rules and methods for examining the effects of temperature</p> <ol style="list-style-type: none"> 1- Ability to mathematical modeling of thermodynamic processes 2- Process modeling in thermal machines 3- Mastering the rules and principles of thermodynamics
Contents	<ol style="list-style-type: none"> 1. Definition and history of thermodynamics, dynamical system and characteristic volume, process and cycle, the zeroth principle of thermodynamics, temperature evolution 2. Equilibrium of three phases (steam, liquid, solid), complete and gaseous gases, thermodynamic properties tables, phase of Gbys 3. Definition of work, the boundary displacement task of a compressible system in the quasi-equilibrium process, heat definition, work and heat comparison 4. The first principle of thermodynamics for a system with a cycle in circulation, the first principle of thermodynamics for a system with state change, internal energy, the principle of mass survival, the first principle of thermodynamics for characteristic volume, enthalpy, uniform state, process with uniform flow, uniform state , The process with the same flow, the specific heat in constant volume and at constant pressure, the quasi-equilibrium process in a system with constant pressure, internal energy, enthalpy, and the specific heat of complete gases 5. Heat and refrigerant machines, their efficiency, the second principle of thermodynamics, the reversible process, and the irreversibility of the process, Carnot's cycle, thermodynamic temperature echelon 6. Cola's inequality, entropy, entropy changes in the reversible and irreversible process, labor drops, reversible adiabatic process, complete entropy variations, entropy expansion, returns, irreversibility and ability to perform work, reversible work
Duration	1 Semester (16 weeks)
Course Hours	3 hours/week
Course Type	Required