Program and Degree: **BSc in Aerospace Engineering**	
Course Description	
Course Title	**Principles of Propulsion**
Prerequisites	Aerodynamics 2, Thermodynamics 2
The course aims	Students' acquaintance with the principles of propulsion systems in flying vehicles 1- The ability to mathematical modelling propulsion systems 2- The ability to election a suitable propulsion system for an assumed application 3- Design and Calculation of propulsion systems
Contents	1- Introduction: Gas turbine cycles in jet engines and introducing their various components (inlet, compressor, combustion chamber, turbine and exhaust nuzzle) 2- Air Engines: Thermodynamics of jet engines, Thrust and Efficiency Relationships, Piston Engines, Turbojet Engines, Turbofan Engines, ramjet and pulsejet Engines, Turboprop and Turboshaft Engines. 3- Aerothermodynamics of jet engines : subsonic and supersonic inlet flow, combustion chamber and exhaust nuzzle 4- An Introduction to jet engines turbomachinery: a- Centrifugal compressors (Impeller, Inducer, Diffuser) b- Axial compressors c- Axial Turbines 5- Matching of engine components such as inlet, compressor, combustion chamber, turbine and exhaust nuzzle 6- Effect of altitude and speed of flight on the performance of jet engines 7- Effect of air shortage on jet engines 8- Avoidance of freezing in jet engines 9- Launching of jet engines 10- An introduction for rocket engines and space propulsion systems.
Duration	**1 Semester (16 weeks)**
Course Hours	**3 hours/week**
Course Type	**Required**