

Aircraft Engines

Internal aerodynamics of propulsion systems

Location :	ISAE-SUPAERO
Objectives :	The purpose of this course is internal aerodynamics of air intakes (subsonic, supersonic and hypersonic), of compressors and turbines (rotors and stators), and nozzles of turbojets engines and rocket engines (influence of viscosity, stalling criteria, reattachment, shock waves...).
Prerequisites :	General aerodynamics, fluid mechanics
Contents :	Generalities on Propulsion, functioning of subsonic and supersonic air intakes (without and with mouse, shocks position, surge), friction and stalling problems in nozzles Dimensioning of compressors and turbine cascade blades (rotors and stators), associated criterias.
Duration :	16 sessions of 60 each
Professor :	Alain CARRERE
Bibliography :	"Propulsion Elements" by A. CARRERE (SUPAERO Edition)
Evaluation :	Written exam (midterm quiz)