6th Semester

Propulsion-II

Subject code-**PAE6I102**

Module – I
AIRCRAFT GAS TURBINES

Impulse and reaction blading of gas turbines – Velocity triangles and power output – Elementary theory – Vortex theory – Choice of blade profile, pitch and chord – estimation of stage performance – Limiting factors in gas turbine design- Overall turbine performance – Methods of blade cooling.

Module – II
RAMJET PROPULSION:

Operating principle – Sub critical, critical and supercritical operation – Combustion in ramjet engine – Ramjet performance – Simple ramjet design calculations – Introduction to scramjet.

Module – III
FUNDAMENTALS OF ROCKET PROPULSION

Operating principle – Specific impulse of a rocket – internal ballistics- Rocket nozzle classification – Rocket performance considerations.

Module – IV
CHEMICAL ROCKETS

Solid propellant rockets – Selection criteria of solid propellants – Important hardware components of solid rockets – Propellant grain design considerations – Liquid propellant rockets – Selection of liquid propellants. Cooling in liquid rockets – Hybrid rockets.

Module – V
ADVANCED PROPULSION TECHNIQUES

Electric rocket propulsion – Ion propulsion techniques – Nuclear rocket – Types – Solar sail- Preliminary Concepts in nozzle less propulsion.