

Fundamentals of Aerospace Propulsion

Introduction to Propulsion, Basic thermodynamics, Conservation Equation, 1D isentropic flow, Normal and Oblique Shocks, Rayleigh Flow and Fanno Flow,

Derivation of the thrust equation, Performance parameters of both of air breathing and non-air breathing engines

Elements of Combustion: Thermochemistry, Adiabatic temperature, Types of flame, Premixed Flame, Diffusion flame, Droplet combustion

Cycle analysis of air breathing systems,

Rocket engines: Solid rocket, liquid rocket engine and hybrid engines.

Reference books:

1. Mishra D. P, Gas Turbine Propulsion, Anamaya Publisher, New Delhi 2011
2. Mishra D. P, Fundamental of Combustion, PHI Learning Pvt Ltd, New Delhi 2010
3. Mishra D. P, Engineering Thermodynamics, Cengage Learning Pvt Ltd, New Delhi 2011
4. Hill, P.G. and Peterson, C., Mechanics and Thermodynamics of Propulsion, 2nd Ed., Prentice Hall, 1991.
5. Sutton, G.P. and Biblarz, O., Rocket Propulsion Elements, 7th Ed., Wiley India Pvt Ltd., 2010.
6. Oates, G.C., Aerothermodynamics of Gas Turbine and Rocket Propulsion, AIAA, 1988.
7. Mattingly J D, Elements of Gas Turbine Propulsion, McGraw Hill Int. 1996.