

Jet and Rocket Propulsion - Video course

COURSE OUTLINE

Principles of Rocket Propulsion:

Thrust, Specific Impulse.

Launch Vehicle Dynamics:

Range, Vertical velocity, Multistage rockets, Orbits and Space flight.

Chemical Rockets:

Performance of ideal Rocket Engine, Combustion in Rocket motors, Liquid Propellant, Solid Propellant.

Nozzles:

Types of nozzle, Nozzle design.

Electric Propulsion:

Electric thrusters, Electromagnetic Thrusters, Plasma Thrusters, Applications of Electric Propulsion.

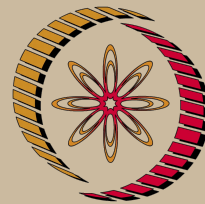
COURSE DETAIL

A video course shall consist of 40 or more lectures with 1 hour duration per lecture.

| S.No | Topics | No.of Hours |
|------|----------------------------------|-------------|
| 1 | Principles of Rocket Propulsion. | 3 |
| 2 | Launch Vehicle Dynamics. | 11 |
| 3 | Chemical Rockets. | 18 |
| 4 | Nozzles. | 4 |
| 5 | Electric Propulsion. | 4 |

References:

1. **Mechanics and Thermodynamics of Propulsion**, P. Hill and C. Peterson, Addison-Wesley Publishing Company.
2. **Rocket and Spacecraft Propulsion**, M. J. L. Turner, Springer Praxis Publishing.
3. **Propulsion Techniques**, P. J. Turchi, Ed., AIAA Book Series.



NP-TEL

NPTEL

<http://nptel.iitm.ac.in>

Aerospace Engineering

Pre-requisites:

1. Fluid Mechanics.
2. Thermodynamics.
3. Compressible Flows.

Additional Reading:

1. **Modern Compressible Flow**, J. D. Anderson, McGraw Hill.
2. **Thermodynamics**, W. Z. Black and J. G. Hartley, Harper Collins College Publishers.
3. **Principles of Combustion**, K. K. Kuo.

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