

# Introduction to Helicopter Aerodynamics and Dynamics - Video course

## 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	Introduction. <ol style="list-style-type: none"> <li>1. Historical Development of Helicopters.</li> <li>2. Helicopter Configuration.</li> <li>3. Control Requirements.</li> <li>4. Types of Rotor Systems.</li> <li>5. Basic Power Requirements.</li> </ol>	8
2	Introduction to Hovering Theory. <ol style="list-style-type: none"> <li>1. Momentum Theory.</li> <li>2. Blade Element Theory.</li> <li>3. Combined Blade Element and Momentum theories for non uniform inflow calculation.</li> <li>4. Ideal Rotor Vs Optimum Rotor.</li> </ol>	10
3	Vertical Flight. <ol style="list-style-type: none"> <li>1. Various flow states of Rotor.</li> <li>2. Autorotation in Vertical Descent.</li> <li>3. Ground Flight.</li> </ol>	7
4	Forward Flight. <ol style="list-style-type: none"> <li>1. Momentum Theory.</li> <li>2. Variable Inflow Models.</li> <li>3. Blade Element Theory.</li> <li>4. Rotor Reference Planes.</li> <li>5. Hub Loads.</li> <li>6. Power variation with forward speed.</li> <li>7. Rotor Blade flapping Motion: Simple Model.</li> </ol>	10



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# NPTEL

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

## Aerospace Engineering

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5	Helicopter Trim and Stability. <ol style="list-style-type: none"><li>1. Equilibrium condition of helicopter.</li><li>2. Trim analysis.</li><li>3. Basics of helicopter stability.</li></ol>	10	
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