NOC: Aircraft Dynamic Stability & Design Stability Augmentation System - Video course

COURSE DETAIL
This course is designed to understand aspects of advance dynamic stability of an airplane. This course will also help in creating a background to design an airplane from stability and control aspects.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>• Introduction to dynamic stability&lt;br&gt;• Introduction to dynamic stability&lt;br&gt;• First and second order system&lt;br&gt;• First and second order system&lt;br&gt;• Solution of second order system using Laplace transform.</td>
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<td>2</td>
<td>• Physical interpretation of natural and damped frequencies damping ratio time to half and time to double&lt;br&gt;• Physical interpretation of natural and damped frequencies damping ratio time to half and time to double&lt;br&gt;• Physical interpretation of natural and damped frequencies damping ratio time to half and time to double&lt;br&gt;• 6dof equations motion of aircraft&lt;br&gt;• 6dof equations motion of aircraft</td>
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<td>3</td>
<td>• Euler angles&lt;br&gt;• Euler angles&lt;br&gt;• Development of longitudinal small perturbed equations of motion&lt;br&gt;• Development of longitudinal small perturbed equations of motion&lt;br&gt;• Development of longitudinal small perturbed equations of motion</td>
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| 4 | • Dimensional derivatives  
    • Dimensional derivatives  
    • Roots  
    • short period and long period mode  
    • short period and long period mode |
|---|---|
| 5 | • Design of SAS for longitudinal mode  
    • Design of SAS for longitudinal mode  
    • Transfer function and longitudinal mode shapes  
    • Lateral directional perturbed equations of motion  
    • Lateral directional perturbed equations of motion |
| 6 | • Dimensional derivatives lateral  
    • Dimensional derivatives lateral  
    • Roots lateral  
    • Spiral roll and dutch roll mode  
    • Spiral roll and dutch roll mode |
| 7 | • Transfer function Lateral  
    • Transfer function Lateral  
    • Design of SAS For lateral  
    • Design of SAS For lateral  
    • Design of SAS For lateral |
| 8 | • Mode shape  
    • Mode shape  
    • Mode shape  
    • Inertial Sensors  
    • Inertial Sensors |

**References:**

Flight Stability and Automatic Control  
Author: Robert Nelson