

ME 756A: Term paper allotment list (Last date: 10 April)

Roll No.	Project No.
14042	2
14065	4
150500	4
150557	5
160069	2
160070	1
160155	3
160335	1
160523	3
160756	2
160792	5
160813	2
14807510	4
14807567	3
14807568	2
14807763	1
15807053	3
15807136	1
15807533	5
15807534	3
15807764	1
15807841	4
17105001	3
17105191	4
18105004	5
18105005	2
18105007	1
18105018	4
18105028	5
18105078	2
18105417	5

Project No.	Name
1	Modelling of viscoelastic material
2	Flow-induced vibration
3	Modelling of Dynamic Vibration Absorber
4	Modelling of damping in beam
5	Active vibration control of cantilever beam

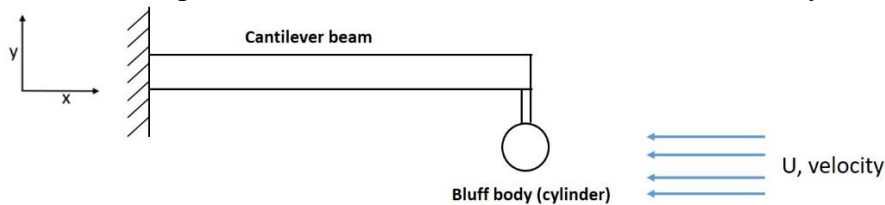
ME-756A: Term Paper Topics (MATLAB Coding-based only)

Develop programs in MATLAB to demonstrate your term paper. **No** bulk theory/literature survey is required. Describe your results, conclusions and submit (both hard & soft copy) along with code (.mfile) latest by **10 April**.

1. Modelling of viscoelastic material models (K-V model, Maxwell model, solid-linear solid, solid-linear fluid model, etc.) to obtain transmissibility/ harmonic response. Assume a viscoelastic sample of mass 'm', stiffness 'k' and damping 'c' modelled by above models and plot their relative response.

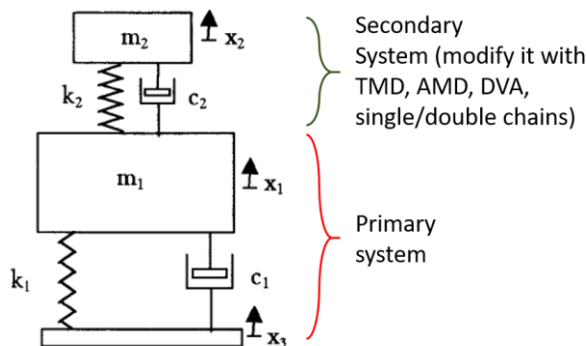
2. Modelling of Flow-induced vibration.

Obtain the response of a cantilever beam under the excitation by flow induced vibration.



3. Modelling of Dynamic Vibration Absorber using Tuned Mass Damper (TMD), Auxiliary Mass Damper (AMD) and DVA.

Compare your results with the case in which only SDOF is vibrating and when DVA is attached to it.



4. Modelling of damping in beam.

Consider two cantilever beams of rectangular beams (Case-I: with no damping and Case-II: with viscous, structural damping) and compare their response to harmonic excitation.

Now repeat same with beam of circular cross-section and compare your results

5. Active vibration control of cantilever beam using P, PI, PID controller.

Consider a rectangular cross-section cantilever beam subjected to various excitations. Obtain it's response without controller and with the above mentioned controllers integrated in a closed loop. Show root locus, step response, impulse response and harmonic response.