ME 588 Dynamics and Vibrations
Fall 2007

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Text: Principles and Techniques of Vibrations
L. Meirovitch, Prentice Hall

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Course Objectives:

This is an introductory graduate course in dynamics and vibrations. At the end of the quarter you will be familiar with Newtonian and Lagrangian dynamics and a wide range of analytical and approximate tools for the analysis of linear discrete mass and continuous systems.

Topics to be covered:

- Review of linear and nonlinear dynamics
- Newtonian and Lagrangian dynamics
    - Newton's 2^{nd} law
    - Work and energy
    - Virtual work
    - Calculus of variation
    - Stability
    - Hamilton's principle
    - Lagrange equation of motion
- Vibration of single degree of freedom systems
    - Free vibration
    - Damping
    - Forced vibration
    - Isolation
    - Vibration control
- Vibration of two and multi degree of freedom systems
    - Free and Forced Vibration
    - Vibration Control
- Vibrations of continuous systems
    - Strings, rods, beams, plates
    - Vibration control
    - Noise from vibrating panels
    - Approximate methods
        - Galerkin / Rayleigh Ritz Method
        - Finite element analysis

Grading: Midterm: 25% ~~(Nov 9)~~
Final: 50% (Dec 11, 2:30-4:30 pm)
Homework: 25%