

# AA 242B / ME 242B: Mechanical Vibrations

**Schedule:** Spring 19, M-W-F (2 of 3) 3:00 pm – 4:20 pm

**Units:** 3

**Venue** : Huang Engineering Center 18



## Course Description

This course is designed for M.S.-level students. It covers the vibrations of discrete systems and continuous structures, and an introduction to the computational dynamics of linear/linearized engineering systems. No prior knowledge of structural dynamics is assumed.

## Course Outline

Review of Analytical Dynamics of Discrete Systems – Undamped and Damped Vibrations of N-Degree-of-Freedom Systems – Continuous Systems - Approximation of Continuous Systems by Displacement Methods – Solution Methods for the Eigenvalue Problem - Direct Time-Integration Methods.

## Prerequisites

- ✚ AA 242A, ME 333A, or equivalent (recommended but not required).
- ✚ Basic knowledge of linear algebra and ODEs.

## Textbook and Other Reading Materials

- ✚ M. Geradin and D. Rixen, Mechanical Vibrations: Theory and Applications to Structural Dynamics, Second Edition, Wiley, John & Sons, Incorporated, ISBN-13: 9780471975465.
- ✚ Lecture notes and various reading materials.

## Homeworks

- ✚ Assigned in general on a weekly basis.

## **Examination**

- ✚ Two-day Take Home Final Exam.
- ✚ Subject to the Stanford Honor Code.

## **Course Grade**

- ✚ Based 60% on the grades for the homework assignments.
- ✚ Based 40% on the grade for the Take Home Final Exam.
- ✚ In fairness to all, and in order to enable a timely posting of the solutions: homework assignments are due on time or will not be graded; Take Home Final Exam is administered only once.

## **Instructor**

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## **Grader**

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## **Students with Documented Disabilities**

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Student Disability Resource Center (SDRC) located within the Office of Accessible Education (OAE). SDRC staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an *Accommodation Letter* for faculty dated in the current quarter in which the request is being made. Students should contact the SDRC as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066).