

**UNIVERSITY OF SOUTHERN CALIFORNIA**  
**Department of Civil Engineering**

Spring 2019

**CE 541b**

**DYNAMICS OF STRUCTURES**

Instructor:

S.F. Masri  
KAP 206A  
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Office Hours:

Monday: 2:00 - 4:00 pm; Tuesday: 10:00 am - noon

Class No.

Section 29801

Class time & Place:

Monday 6:30 - 9:10 pm; Room: KAP 134

Textbook:

“Fundamentals of Vibrations,” by Leonard Meirovitch (McGraw-Hill), 2001

Prerequisite:

CE 541a or equivalent

Drop Dates:

Friday, 25 January 2019 without “W”; Friday, 5 April 2019 with “W”

Final Exam:

Monday, 6 May 2019, 7:00-9:00 pm

Grades:

Homework & Project/Midterm/Final: 35%/30%/35%

**Late Homework will not be accepted.**  
**No make-up on any exam.**

**COURSE OUTLINE**

1. Computational Techniques in Structural Dynamics
2. Continuous Systems; Approximate Methods
3. Random Vibration Concepts; Stationary and Non-Stationary Response of MDOF Systems
4. Response of Continuous Systems to Random Excitation
5. Introduction to Structural Control (Passive, Active, and Hybrid)
6. Vibration-Based Health Monitoring and Damage Detection Approaches Based on System Identification
7. Nonlinear Systems; Geometric Theory
8. Nonlinear Systems; Approximate Methods
9. Experimental Structural Dynamics (Sensors; Instrumentation Networks; Actuators)
10. Laboratory Demonstrations and Assignments Involving Instrumented Models
11. \* Individualized Projects (Analytical, Computational, or Experimental); Note: Project topics can span a very broad range of investigations covering topics related to structural design and code applications, development of computational constitutive models, random vibration studies, and nonlinear analysis techniques, using analytical, computational, or experimental procedures.