

Spring 2022

CE 634-104: Structural Dynamics

Mohamad Saadeghvaziri

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New Jersey Institute of Technology
Department of Civil and Environmental Engineering
CE 634 – Structural Dynamics

Instructor:

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 Office hours: Mondays: 1-2:30, and Wednesdays 4-5:30; or by appointment.

Textbook

Chopra, Anil K., “Dynamics of Structures: Theory and Applications to Earthquake Engineering,” 4th Edition, Prentice Hall, Sept. 2012, ISBN 13: 978-0-13-285803-8

Outline:

| Week(s) | Subject | Chapter(s) |
|---------|---|------------|
| 1 | SDOF: Introduction, Equation of Motion (EOM), Free Vibration, Rigid Body Assemblages | 1, 2, 8 |
| 2-3 | SDOF: Response to Harmonic Excitations | 3 |
| 4-5 | SDOF: Response to General Excitations | 4 |
| 6-7 | Numerical Integration of EOM; Application(s) for Dynamic Analysis of SDOF (such as NONLIN - http://training.fema.gov/EMIWeb/nonlin.asp) | 5 |
| 8 | Mid-Term (tentative), Project Definition | |
| 9 | Introduction to Earthquake Engineering: Response Spectrum Concept | 6 |
| 10 | MDOF: Introduction, EOM, Free Vibration, Mode Shapes, Frequencies | 9-10 |
| 11-12 | MDOF: Modal Analysis, Forced Vibration | 12 |
| 13 | Systems with Distributed Mass and Elasticity | 16 |
| 14 | Approximate Methods | 8, 10 |
| 15 | Final | |

Grading:

| | |
|----------|-----|
| Homework | 25% |
| Mid-Term | 25% |
| Project | 25% |
| Final | 25% |