

Advanced Structural Dynamics

2 units (selection)

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Target To understand the dynamic response and control of structures

Outline In the first half of the semester, following the 'Introduction on Structural Dynamics' learned in under graduate course, methodologies to construct the physical and mathematical models of structural oscillations are reviewed and meanings of their mathematical solutions are examined again in physical standpoint. In the latter half, random vibration theories based on the statistics and probability and passive and active structural oscillation control are introduced. For the purpose to deepen the understanding, many exercises are prepared.

Style Lecture and exercise

Keyword *analysis of dynamic response, analysis of random vibrations, control of dynamic response*

Fundamental Lecture “**Structural Dynamics and Exercise**”(1.0)

Relational Lecture “**Advanced Structural Design**”(0.5)

Goal To understand the dynamic response and control of structures

Schedule

1. Introduction
2. Basic descriptive properties of random data
3. Joint properties of random data
4. Theory of stationary random processes
5. Models of random excitations
6. Stochastic responses of SDOF systems
7. Stochastic responses of MDOF systems
8. Stochastic responses of continuous systems
9. Design of structures for random excitations
10. Controls of vibrations
11. Passive vibration control
12. Semi-active vibration control
13. Active vibration control
14. Aerodynamic vibration of structures
15. Control of Aerodynamic vibration of structures

Evaluation Criteria evaluated by attitude in class (80%) and reports (20%)

Textbook To be introduced in the class

Reference To be introduced in the class

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216707>

Contact

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