

## Mechanical Systems Design

2 units (selection)

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**Target)** The applied technologies of modeling, simulation, control and design methods for mechanical systems are made to master.

**Outline)** In mechanical systems, modelling and simulation by using modal analysis, semi-active and active vibration controls of mechanical systems, optimum design of active mass dampers for mechanical systems, intelligent vibration controls of mechanical systems, semi-active and active vehicle suspensions by modern control theory, and semi-active and active vehicle suspensions by intelligent methods are lectured.

**Style)** Lecture

**Keyword)** *modal analysis, vibration control*

**Requirement)** Students are required to have a good understanding of basic applied dynamics and vibratoin control

**Goal)**

1. To understand knowledge of dynamic design method of mechanical systems
2. To advance applied technologies for dynamic design method

**Schedule)**

1. Modeling and simulation by modal analysis method 1
2. Modeling and simulation by modal analysis method 2
3. Modeling and simulation by modal analysis method 3
4. Modeling and simulation by modal analysis method 4
5. Active and semi-active vibration control method 1
6. Active and semi-active vibration control method 2
7. Active and semi-active vibration control method 3
8. Vibration control by active mass damper 1
9. Vibration control by active mass damper 2
10. Vibration control by intelligent control methods 1
11. Vibration control by intelligent control methods 2
12. Design of active suspension of vehicles by modern control theory 1
13. Design of active suspension of vehicles by modern control theory 2
14. Design of active and semi-active suspension of vehicles by intelligent control theory 1
15. Design of active and semi-active suspension of vehicles by intelligent control theory 2

**Evaluation Criteria)** Assignments count 100%

**Textbook)** Printed synopses are used

**Reference)** To be introduced in the class

**Contents)** <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216602>

**Student)** 工学研究科博士課程 1, 2, 3 年次

**Contact)**

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