



















































Hokkaido University Syllabus

Hokkaido University Syllabus					
  Course Title					
Vibrations in Engineering					
  Subtitle					
  Instructor (Institution)					
Yukinori KOBAYASHI(Faculty of Engineering)					
  Other Instructors (Institution)					
Yukinori KOBAYASHI(Faculty of Engineering) Itsuro KAJIWARA(Faculty of Engineering)					
  Course Type				  Open To Other Faculties / Schools	OK
  Year	2017	  Semester	2nd Semester (Winter Term)	  Course Number	016111
  Type of Class	Lecture	  Number of Credits	2	  Year of Eligible Students	2~
  Eligible Department / Class				  Other Information	
  Numbering Code	ENG 2601				
  Major Category Code	  Major Category Title				
ENG	Engineering, Graduate School of Engineering				
  Level Code	  Level				
2	General Education Courses (Foreign Language Seminar (advanced) and subjects offered in the upper years); Specialized Subjects (Introductory and basics)				
  Middle Category Code	  Middle Category Title				
6					
  Small Category Code	  Small Category Title				
0					
  Language Code	  Language Type				
1	Classes are in English.				

  Key Words

Vibration, Equation of motion, Response, Vibration characteristics, Degree of freedom (DOF)

  Course Objectives

This course offers fundamentals on engineering mechanics and analytical approaches for vibration problems. Equations of motion of 1 DOF and 2 DOF systems are explained and vibration characteristics can be learned from many examples. Vibration analysis of simple continuous system like string is also explained.

  Course Goals

Understandings on fundamental analysis of free and forced vibration problems of 1 DOF and 2 DOF systems.

■ ■ Course Schedule

1. Guidance and introduction on vibration
2. Free vibration of single degree of freedom system (2 times)
3. Energy method
4. Free vibration of viscous damping system (2 times)
5. Forced vibration of viscous damping system (2 times)
6. Rotor system and equivalent damping
7. Column damping
8. Fourier series and Fourier transform
9. Free vibration of multi degree of freedom system (2 times)
10. Forced vibration of multi degree of freedom system (2 times)
11. Vibration of string

■ ■ Homework

One hour review about the topic of each lecture is recommended.

■ ■ Grading System

Several assignments are required to submit. Students who attend more than 60 % can take the final examination.
20% assignments
80% final examination

■ ■ Textbooks

Handouts are delivered for your understanding. Please contact the instructors if you need further advice.

■ ■ Reading List

[機械振動学通論第3版 / 入江敏博, 小林幸徳 : 朝倉書店, 2006, ISBN:4254231164](#)
[Mechanical Vibrations \(5th Edition\) / Singiresu S. Rao : Pearson, ISBN:0132128195](#)

■ ■ Websites

■ ■ Website of Laboratory

http://mech-hm.eng.hokudai.ac.jp/~rd/labo/index_en.html

■ ■ Additional Information

■ ■ Update

2017/01/26 19:54:13