

Course Name	Applied Mathematics for Engineering Mechanics		
Semester, Year	First Semester, 2019 (Spring Term)	Number of Credits	1 credit
Course level	2000	Course Number	027020
Instructor(s) (Institution)	Yukinori KOBAYASHI 大学院工学研究院		
Course Objectives	Differential equations are learned to express equations of motion of dynamic systems. Fourier transform and Laplace transform are essential mathematics to study vibration and control theory. Linear algebra is also important to analyze large scale engineering problem numerically. In this course, the relationship between mathematics and physics can be studied by some applications on engineering mechanics.		
Course Goals	<ol style="list-style-type: none"> 1. Understandings on fundamental treatment of differential equations. 2. Understandings on Fourier transform and Laplace transform. 3. Understandings on frequency response. 4. Understandings on fundamental treatment of linear algebra. 		
Course Schedule	<p>Week1 First-order ordinal differential equation Week2 Second-order ordinal differential equation Week3 Nonhomogeneous differential equation Week4 Fourier series and Fourier transform Week5 Laplace transform Week6 Frequency response and complex plane Week7 Linear algebra and eigenvalue problems Week8 Partial differential equations</p>		
Homework	One hour review about the topic of each week is recommended.		
Grading System	Several assignments are required to submit. 30% assignments 70% final examination		
Textbooks / Reading List	There is no one textbook that adequately responds to the goal of this lecture. Some reading materials and handouts will be prepared for your understanding. Please contact the instructor if you need further advice. Advanced engineering mathematics C. Ray Wylie, Louis C. Barrett McGraw-Hill 1995		
Websites			
Website of Laboratory	http://mech-hm.eng.hokudai.ac.jp/~rd/labo/index_en.html		
Additional Information			