



HANYANG UNIVERSITY

Hanyang International Summer School

Faculty Information	Name	Wei WANG					
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	Home University	Hanyang University					
	Department	Department of Mechanical Engineering					
	Homepage						
Course Information	Class No.	18071	Course Code	TBA	Credits	3	
	Course Name	Engineering Mathematics 1					
	Lecture Schedule	Tue-Fri / 09:00~12:00					
	Course Description	<p>In this course, we learn ordinary differential equation(O.D.E.), linear differential equation(L.D.E.), series, series solution in differential equations and Laplace transformation systematically based on differential and integral calculus (fundamental prerequisite), and the linear algebraic equations by use of matrix analysis.</p> <p>* The course schedule is subject to change due to unforeseen circumstances.</p>					
	Course Objective	General and Particular Solutions of Ordinary Differential Equation (ODE), Series Solutions of ODEs, Laplace Transform-based Solution of ODEs					
	Prerequisite	Basic Linear Algebra					
	Materials/Textbooks	Advanced Engineering Mathematics (Erwin Kreyszig) (Chapters 1-6)					
Evaluation	Attendance	10%	Quiz	%			
	Assignment	20%	Mid-term Exam	%			
	Presentation	%	Final Exam	70%			
	Group Project	%	Participation	%			
	Etc.	Evaluation Item			Ratio		
					%		
			%				
Daily Lecture Plan	Week 1	Day 1	Introduction to the class and syllabus				
		Day 2	First-Order ODEs: Basic Concepts. Modeling. Separable ODEs				
		Day 3	First-Order ODEs: Exact ODEs. Integrating Factors				
		Day 4	First-Order ODEs: Linear ODEs. Bernoulli Equation.				
	Week	Day 1	Second-Order Linear ODEs: Homogeneous Linear ODEs of Second Order (with Constant Coefficients)				

	2	Day 2	Second-Order Linear ODEs: Euler–Cauchy Equations.
		Day 3	Second-Order Linear ODEs: Nonhomogeneous ODEs.
		Day 4	Second-Order Linear ODEs: Solution by Variation of Parameters
	Week 3	Day 1	Higher Order Linear ODEs: Homogeneous Linear ODEs (with Constant Coefficients).
		Day 2	Higher Order Linear ODEs: Nonhomogeneous Linear ODEs.
		Day 3	Systems of ODEs: Homogeneous an Nonhomogeneous Linear Systems of ODEs.
		Day 4	Series Solutions of ODEs: Power Series Method.
	Week 4	Day 1	Series Solutions of ODEs: Extended Power Series Method: Frobenius Method.
		Day 2	Laplace Transforms: Laplace Transform and its properties.
		Day 3	Laplace Transforms: Solutions of ODEs based on Laplace Transform.
		Day 4	Final Exam