

CE 526 Engineering Mathematical Methods 29741D, 29742D (3 units)

2019Fall Semester — Course Syllabus

Professor	Vincent Lee, vlee@usc.edu		
Office	KAP 230B		
Phone	(213) 740-0568		
Blackboard	Register at 1) https://courses.uscdcn.net and 2) https://piazza.com		
Office Hours	MW9-10am, MW 3-3:30pm at KAP230B or other times through Piazza		
Teaching Assistant	TBA		
Email	Through Piazza		
Office Hours	TBA		
COURSE DESCRIPTION			
Engineering Mathematical Methods for solutions of problems encountered in civil, mechanical and aerospace engineering			
COURSE OBJECTIVES			
Engineering problems discussed on a physical basis with solutions via mathematical tools: Fourier series; Fourier and Laplace transforms; partial differential equations, wave and Laplace equations. Duplicates credit in CE 525b. Recommended preparation: undergraduate multivariable calculus and ordinary differential equations.			
LEARNING OBJECTIVES			
After reviewing what we learned in our undergraduate Math/Calculus courses, we learn Fourier series, eigenvalues & functions, systems of ODE. Then we spent almost 2 months on PDE, when we solve the wave, heat and Laplace equations in both rectangular and polar coordinates. We then discuss transform methods in the last month.			
Prerequisite	none		
Days, Time, Location	Monday	3:30 – 6:10 p.m.	RTH105
Required Textbook	E. Kreyszig Advanced Engineering Mathematics 10 th ed. ISBN-13: 978-0470458365		
Required Course	Master of Science in Civil Engineering – Structural & other options		
Grading Schema	Homework	10	%
	All Exams	90	%
	Total	100	%

CE 526 Engineering Mathematical Methods –Class

DATE		Topics	Homework
Week	WED		Posted on Blackboard Due Next Wk
1	8/26	L00 - Review - PreQuiz L00A –Math Paradoxes!!!!	
9/02 Monday Labor Day ----- USC Holiday			
3	9/09	L01 - Fourier Series, Orthogonal Series Expansions	HW#1: L01
4	09/16	L02- Eigenvalues, Eigenvectors & Eigenfunctions	HW#2: L02
5	09/23	L03 - System of ordinary Differential Equations Applications	HW#3: L03
6	09/30	L04 - Partial Differential Equations (PDE) Method of Separation of Variables	HW#4: L04
7	10/07	L05 5.1-5.3 - One Dimensional (1D) Wave Equation,	
4:55-6:10pm		MIDTERM #1: Weeks 01-06	HW#5: L5.1-3
8	10/14	L05 (cont) 5.4-5 - One Dimensional (1D) Beam Equation L06 6.1,3 - (2D) Wave Equation	HW#6: L05,06
9	10/21	L06 (cont) 6.2 - Non-homogeneous PDE L07 7.1-4 – 1D Heat Equation	HW#7; L06,07
10	10/28	L07 7.5 - 2D Heat Equation L07 7.6 – Non-homogeneous Heat Equation	HW#8: L07
11	11/04	L08 8.1,2 – 2D Laplace Equation in Rectangular Coord L08 8.3 2D Laplace Equation in Cylind. (Polar) Coord	HW#9: L08
12	11/11	L09 9.1 – 2D Wave Equation in Cylindrical Coordinates	
4:55-6:10pm		MIDTERM #2: Weeks 07-11	HW#10: L09
13	11/25	L09 9.2– 2D Wave Equation (cont.): Symmetric case L10 –Sturm-Liouville Problem-	HW#11 L9,10
11/27 – 11/30 Wed-Sat Thanksgiving (USC Holidays)			
14	12/2 12/16	L11 – Fourier Transform L12 – Laplace Transform Final 2-4pm (to be revised: same time as CE507)	HW#12 L11,12

STATEMENT ON ACADEMIC INTEGRITY

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own.

All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

- <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty.
- The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

STATEMENT FOR STUDENTS WITH DISABILITIES

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible.

DSP Contact Information

- Office Location: STU 301
- Open: 8:30 a.m. until 5:00 p.m., Monday through Friday.
- Phone number: (213) 740-0776