

Mathematical Methods for the Physical Sciences

Academic Calendar and Homework Assignments

Week	Lecture No.	Date	Chapter/Exam	Homework
1	1	Tue, Jan 17	Introduction. Course logistics. Ch. 2A, Complex numbers and complex variables: coordinate and polar form; Euler's formula; trigonometric identities; complex roots. Mathematica: <code>Integrate[]</code> , <code>N[]</code> , <code>Sin[]</code> , <code>Pi</code>	
	2	Thu, Jan 19	Ch. 2B, Analytic functions; Cauchy-Riemann equations. OofMP: $(1 - \epsilon)^n \approx e^{-n\epsilon}$, $\int_{-1}^1 \cos(x)^{100} dx$, Gaussian integrals. Mathematica: <code>Plot[]</code>	
2	3	Tue, Jan 24	Ch. 2C, Contour integrals in the complex plane. OofMP: Feynman's "different box of tools" – evaluation of integrals by differentiation with respect to a parameter.	HW1 due
	4	Thu, Jan 26	Ch. 2C, Contour integrals of analytic functions; Ex: $\int_0^\infty \cos(x^2) dx$; Cauchy integral formula.	
3	5	Tue, Jan 31	Ch. 2C, Taylor and Laurent series; isolated singularities; Cauchy residue theorem.	HW2 due
	6	Thu, Feb 2	Ch. 2D, Calculating residues. Evaluation of integrals I.	
4	7	Tue, Feb 7	Ch. 2D, Evaluation of integrals II.	HW3 due
	8	Thu, Feb 9	Ch. 2F, Guest lecture: Fourier integrals	
5	9	Tue, Feb 14	Ch. 2D, Evaluation of integrals III.	
		Thu, Feb 16	Midterm I	
6	10	Tue, Feb 21		
	11	Thu, Feb 23		
7	12	Tue, Feb 28		HW5 due
	13	Thu, Mar 1		
8		Tue, Mar 6	<i>Spring recess</i>	
		Thu, Mar 8	<i>Spring recess</i>	
9	14	Tue, Mar 13		HW6 due
	15	Thu, Mar 15		
10	16	Tue, Mar 20		HW7 due
	17	Thu, Mar 22		
11	18	Tue, Mar 27		HW8 due
		Thu, Mar 29	Midterm II	
12	19	Tue, Apr 3		

	20	Thu, Apr 5	
13	21	Tue, Apr 10	HW9 due
	22	Thu, Apr 12	
14	23	Tue, Apr 17	HW10 due
	24	Thu, Apr 19	
15	25	Tue, Apr 24	HW12 due
	26	Thu, Apr 26	
16		TBA	FINAL EXAM
