

Math 454-001 Winter 2014 Syllabus

Textbook : Richard Haberman. *Applied Partial Differential Equations, 5th ed.*, Pearson, 2013. ISBN 0-321-79705-1.

day	date		text section	lecture, topics
Thu	9-Jan		§1.1 – 1.3	1. course intro, heat equation
Tu	14-Jan		§1.4 – 2.1	2. equil. solns, 2D/3D heat eqn., linear / homogeneous
Thu	16-Jan	hw 1 due	§2.2 – 2.3	3. sep. variables, orthogonality, e-value problems
Tu	21-Jan		§2.4	4. solving heat eqn., different BC
Thu	23-Jan	hw 2 due	§2.5	5. Laplace eqn, well-posedness
Tu	28-Jan	drop deadline		SNOW DAY
Thu	30-Jan		§3.1 – 3.3	6. Fourier series, Fourier sine series
Tu	4-Feb	hw 3 due	§3.3	7. Fourier cosine series, even / odd parts
Thu	6-Feb	(sub)	§3.4	8. differentiating F. series
Tu	11-Feb		§3.4–3.5	9. eigenfunction expansion, integrating F. series
Thu	13-Feb	midterm 1, hw 4 due		
Tu	18-Feb		§4.1 – 4.3	10. wave equation, derivation
Thu	20-Feb		§4.4	11. solutions of wave equation
Tu	25-Feb		§5.1, 5.3–5.5	12. Sturm-Lioville problems
Thu	27-Feb	hw 5 due	§5.6, 5.8	13. Rayleigh quotient, Sturm-Lioville summary
Tu	4-Mar	no class	spring break	
Thu	6-Mar	no class	spring break	
Tu	11-Mar		§5.10, 7.1 – 7.3	14. Parseval’s identity, PDEs in multi-d
Thu	13-Mar		§7.4 – 7.5	15. Helmholtz equation
Tu	18-Mar		§8.1 – 8.4	16. non-homogeneous problems, e-function expansion
Thu	20-Mar	hw 6 due	§10.1 – 10.4	17. Fourier transforms
Tu	25-Mar		§10.5 – 10.6	18. infinite domain problems
Thu	27-Mar	midterm 2		
Tu	1-Apr		§10.5 – 10.6	19. infinite domain problems
Thu	3-Apr		§9.1 – 9.3	20. Green’s functions for BVP
Tu	8-Apr	(sub)	§8.6, 9.5	21. Poisson’s equation
Thu	10-Apr	(sub) hw 7 due	§9.5	22. method of images
Tu	15-Apr		§12.1 – 12.3	23. method of characteristics
Thu	17-Apr		§12.4 – 12.6	24. quasi-linear equations
Tu	22-Apr	hw 8 due	§13.1 – 13.3	25. Laplace transforms
Thu	24-Apr	no class		
Tu	29-Apr	no class		
Thu	1-May	final exam		