

Mathematical Methods 2002-2003

Partial Differential Equations Syllabus

Draft of March 3, 2003

Texts: Asmar Partial Differential Equations and Boudary Value Problems (Prentice Hall)
 Student Solutions Guide is available on the web. Download it all now while it's still available. See preface.
 Farlow Partial Differential Equations for Scientists and Engineers (Dover)

1 – 6:30 p.m. Tuesday Room 2242

Wk	Date	Read <u>Before</u> Class in Asmar	Topics	Homework Due the <u>following</u> week parenthesis means do this problem last	Farlow Lesson #
10	Mar 4	Kreyszig 4.2 Blanchard 6.1 6.2, 6.3, 6.6	Method of Power Series Laplace Transforms	Kreyszig: 4.2: 1 6.1: 15; 6.2: 9 6.3: 31 summarize pages 596 - 598	
1	Apr 1	Appendix A.4 Ch 1 Ch 2.1 – 2.4:	Method of Power Series Preview of PDEs Fourier Series		1, 11 pp 174-176
2	8	3.1 – 3.5 Appendix A.4 Appendix A.5	Separation of Variables Wave Equation Heat Equation Power Series Solutions Method of Froebius		16 – 20 2 - 5
3	15	3.5 – 3.10	Heat Equation 2-D Wave and Heat Equations Laplace Equation Poisson's Equation		4, 23, 24 31, 32 App. 3 & 4
4	22	4.1 – 4.4 4.6	PDE's in Polar and Cylindrical Coordinate		30
5	29	5 (mainly 5.1 – 5.3)	PDE's in Spherical Coordinates Spherical Harmonics		32 – 36 24
6	May 6	6.1 – 6.3 11.1, 11.2, 11.4	Sturm-Liouville Theory Eigenfunction Expansions Introduction to Quantum Mechanics		7, 9
7	13	Exam			

SEMINAR on Tuesdays: Nutshell is Hawking's The Universe in a Nutshell
 Annotated Alice, Definitive Edition by Lewis Carroll

1	Nutshell Ch. 1 & 2 Relativity and Time	65 pages
2	Nutshell Ch. 3 & 4 Multiple Histories, Information Loss in Black Holes	60 pages
3	Nutshell Ch. 5 – 7 Past, Future, Branes	68 pages
4	Alice's Adventures in Wonderland 7 – 89 and Preface xi – xxvii	100 pages
5	Finish: Alice's Adventures in Wonderland Start: Through the Looking-Glass and What Alice Found There 89 – 193	104 pages
6	Finish: Through the Looking-Glass; The Wasp 194 – 198	94 pages
7		