Schedule & Homework

Date	Topic	Section	Assignments	Due date
Jan 24	An introduction to Fourier series	1.1	**1.1:** 1abc, 2ad, 4, 7b, 8	**HW1** Due Jan 31
Jan 26	Determining Fourier coefficients; Examples	1.2	**1.2:** 1, 7c	
Jan 31	Even & odd extensions Convergence of Fourier series	1.2, 1.3	**1.2:**10b, 11b	**HW2** Due Feb 7
Feb 2	Uniform convergence of Fourier series	1.3, 1.4	**1.3:**1abd, 2ad, 6	
Feb 7	Fourier sine & cosine series Basic operations on Fourier series	1.4, 1.5	**1.4:** 1ae, 2, 3ab, 5bc **page 120:** 19, 20 [use a=3]	**HW3** Due Feb 14
Feb 9	*no class (snow storm)*			
Feb 14	Differentiation of Fourier series The heat equation	1.5, 2.1	**1.5:** 2, 5, 9 **2.1:** 2, 9	**HW4** Due Feb 23
Feb 16	The heat equation Steady-state & transient solutions	2.1, 2.2	**2.2:** 2, 6	
Feb 21	Fixed-end temperatures	2.3	**2.3:** 8 [use a=pi]	
Feb 23	Insulated bar; Examples Review	2.4	**2.3:** 6 **2.4:** 4 [use a=pi], 5, 8	**HW5** Due Mar 9
Feb 28	**Midterm 1** (2:30-3:50pm) Covers 1.1-1.5, 2.1-2.3 -- **Solutions** Practice exams: **Fall 2015** (**Solutions**) and **Spring 2015** (**Solutions**)			
Mar 2	Different boundary conditions	2.5	**2.5:** 4, 5 [use a=pi], 6	
Mar 7	Eigenvalues and eigenfunctions Convection	2.6, 2.7 **Notes**	**2.6:** 7, 9, 10	**HW6** Due Mar 23 **Problem 3c**
Mar 9	Sturm-Liouville problems	2.7	**2.7:** 1, 3abc, 7	
Mar 14	*no class (Spring break)*			
Mar 16	*no class (Spring break)*			
Mar 21	Series of eigenfunctions & examples Fourier integral & applications to PDEs	2.8, 1.9	**2.8:** 1 [use b=2] **1.9:** 1ab, 3a	**HW7** Due Mar 30
Mar 23	Semi-infinite rod The wave equation	2.10, 3.1	**2.10:** 3, 4	
Mar 28	The wave equation	3.2	**3.2:** 3, 4, 5, 7	**HW8** Due Apr 6 **Comments**
Mar 30	D'Alembert's solution; Examples	3.3, 3.4	**3.3:** 1, 2, 5	

Apr 4	The wave equation: generalizations Laplace's equation	3.4, 4.1	**page 255:** 18 **page 257:** 31	**HW9** Due Apr 20 **Comments**
Apr 6	Dirichlet's problem in a rectangle Examples & Review	4.2, 4.3	**4.1:** 2 **4.2:** 5 [use a=1, f(x)=sin(3pix)] **4.2:** 6	
Apr 11	**Midterm 2** (2:30-3:50pm) Covers 2.4-2.8, 2.10, 1.9, 3.1-3.4 -- **Solutions** Practice exams: **Fall 2015** (**Solutions**) and **Spring 2015** (**Solutions**) **Extra practice problems**			
Apr 13	Potential in a rectangle; Examples Potential in unbounded regions	4.3, 4.4	**4.3:** 2b **4.4:** 4a, 5ab	**HW10** Due Apr 27
Apr 18	Polar coordinates Potential in a disk	4.1, 4.5 **Notes**	**4.1:** 6 **4.5:** 1	
Apr 20	Dirichlet problem in a disk; Examples	4.5	**4.5:** 4	
Apr 25	Two-dimensional heat equation	5.3, 5.4 **Notes**	**5.3:** 1, 7c [use a=b=pi]	**HW11** Due May 4
Apr 27	Problems in polar coordinates Bessel's equation	5.5, 5.6	**5.4:** 5	
May 2	Temperature in a cylinder Applications: symmetric vibrations	5.6, 5.7	**5.6:** 3 [use a=1] **page 371:** 1	
May 4	Examples & Review	5.7		
May 15	**Final Exam** (11:15am-1:45pm) -- in class, **Melville Library E4315** The final is cumulative and covers: 1.1-1.5, 1.9, 2.1-2.8, 2.10, 3.1-3.4, 4.1-4.5, 5.3-5.6 Practice exams: **Fall 2015** and **Spring 2015**.			