

# Methods of Applied Mathematics

# Winter Quarter Curriculum

Week	Seminar/Student Presentations	Partial Differential Equations	Complex Variables	Vector Calculus/Variational Calculus
1	Seminar e: The Story of a Number p 1-82 and appendices 1-4	Introduction to PDE's Riley 18.1,18.3.3, Fowler 1,23	Complex Numbers and Algebra Kwok 1.1-1.2, Riley 3.1-3.4	<a href="#">Introduction to LaTeX</a>
		Wave Equation Riley 18.1,18.4, Fowler 16,17,19	Complex Geometry and Topology Kwok 1.3-1.5	Other Coordinate systems Stewart 9.7, Riley 10.9-10.10 <a href="#">Workshop: Snieder 4.1-4.3</a>
2	Seminar e: The Story of a Number p 83-139 and appendices 5-7 Applications: Dim Analysis, Snieder 2.3-2.5 Taylor Series, Snieder 3.2-3.4	Diffusion Equation Riley 18.5, Fowler 2,3,4	Complex Functions and Limits Kwok 2.1-2.2	<a href="#">Graphics and Tables with LaTeX</a>
		Separation of variables Riley 19.1,19.2, Fowler 5,20 <a href="#">Workshop</a>	Complex Differentiation Kwok 2.3-2.5, Riley 20.1	Integrals in other Coordinates Stewart 12.8-12.9, Riley 6.4 <a href="#">Workshop: Snieder 4.4-4.5</a>
3	Holiday: No Monday Class	Break	Harmonic Functions Kwok 2.6, Riley 20.2 <a href="#">Workshop: Snieder 16.1-16.2</a>	Line Integrals Stewart 13.1-13.2, Riley 11.1-11.2 <a href="#">Mathematica Lab</a>
		<a href="#">Test on Weeks 1 and 2</a> Introduction to Fourier Series Riley 12.1-12.3 <a href="#">Workshop: Snieder 15.1</a>	Exponential and Trig Functions Kwok 3.1-3.2, Riley 3.5-3.7	Conservative Fields Stewart 13.3, Riley 11.4 <a href="#">Workshop (Stewart)</a>
4	Seminar e: The Story of a Number p 140-195  Applications: Normal Modes Snieder 13.6 Fluid Flow, Snieder 16.3	Complex Fourier Series Riley 12.4-12.9 <a href="#">Workshop: Snieder 15.2</a>	Complex Logs Kwok 3.3 <a href="#">Mathematica Lab (Mappings)</a>	<a href="#">Test Weeks 1 and 2</a> Green's Theorem, Stewart 13.4
		Applications of Fourier Series Fowler 6,7,8	<a href="#">Test on Kwok Ch 1 and 2</a> TBA	Divergence and Curl Stewart 13.5 <a href="#">Workshop: Snieder 6-7</a>
5	Presentations  Applications: Nuclear Explosion, Snieder 11.5	Eigen-Function Expansions Riley 17.1-17.4, Fowler 9	Complex Integration Kwok 4.1	Surface Integrals Stewart 13.6 <a href="#">Mathematica Lab</a>
		Sturm Louisville Theory Riley 17.5-17.7	Cauchy's Integral Theorem Kwok 4.2, Riley 20.11	Divergence Theorem Stewart 13.8, Riley 11.8 <a href="#">Workshop Snieder 8</a>
6	Presentations  Applications: Gravity in 5-D, Snieder 6.5	Intro to Fourier Transforms Riley 13.1.1-13.1.2, Fowler 10,11	Cauchy's Integral Formula Kwok 4.3, Riley 20.12	Stoke's Theorem Stewart 13.7, Riley 11.9 <a href="#">Mathematica Lab</a>
		<a href="#">Test on Weeks 3-5</a> Dirac Delta Functions Riley 13.1.3-13.1.5 <a href="#">Workshop Snieder 14.1-14.2</a>	Potential Functions Kwok 4.4, Riley 20.7	Change of Basis Riley 21.1-21.5 <a href="#">Workshop: Snieder 22.1-22.5</a>
7	Presentations Applications: Flow Probability, Snieder 8.4	Applications of Fourier Transforms Riley 13.1.6-13.1.9, Fowler 12, 25	Sequences and Series Kwok 5.1-5.2	Tensors <a href="#">Vector Calculus Test</a> Riley 21.6-21.8 <a href="#">Workshop: Snieder 22.6-22.7</a>
		Laplace Transforms Riley 13.2, Fowler 13,14	<a href="#">Test on Kwok Ch 3 and 4</a> Taylor Series Kwok 5.3, Riley 20.13	Applications of Tensors <a href="#">Workshop Snieder 22.8-22.12</a>
8	Holiday: No Monday Class	Break	Laurent Series Kwok 5.5 <a href="#">Mathematica Lab</a>	Calculus of Variations Intro <a href="#">Workshop: Snieder 25.1-25.3</a>
		Higher Dimensional PDE's Fowler 24,30 <a href="#">Workshop</a>	Residues Kwok 6.1-6.2, Riley 20.14-20.15	Euler-Lagrange Equations: Riley 22.1 <a href="#">Workshop: Snieder 25.5</a>
9	Presentations  Applications: Ahronov-Bohm Effect, Snieder 9.5	PDE's in other coordinate systems Riley 19.3, Fowler 33,33,35	Residue Calculus Kwok 6.3 Riley 20.16-20.17 <a href="#">Workshop: Sneider 17.3-17.4</a>	Applications Riley 22.5, <a href="#">Workshop: Snieder 25.6-25.7</a>
		Green's Functions Riley 19.4-19.5, Fowler 36	TBA	Constrained Variation: Riley 22.4 <a href="#">Workshop: Snieder 25.8-25.10</a>
10	Presentations	TBA <a href="#">Review Workshop</a>	TBA <a href="#">Review Workshop</a>	TBA <a href="#">Review Workshop</a>
		<a href="#">Cumulative Final Exam</a>	<a href="#">Cumulative Final Exam</a>	<a href="#">Calculus of Variations Test</a>