

**COURSE OUTLINE and HOMEWORK ASSIGNMENTS** – subject to minor changes :

L-1	Mon 22 Aug	0.1-3	What is numerical analysis? – 5,6,7
L-2	Wed 24 Aug	1.1;0.4	Bisection; Errors – 9,14,15
L-3	Fri 26 Aug	0.4	Computer Arithmetic – 13,21,22
L-4	Mon 29 Aug	0.5-7	Computer Arithmetic; Measuring Efficiency – 17,27,33
L-5	Wed 31 Aug	1.1,2	Bisection and Linear Interpolation – 2,5,11
L-6	Fri 2 Sep	1.3,5	Newton's Method & Fixed-Point Iterations – 13,18,38
	Mon 5 Sep	<b>Labor Day Holiday – no classes</b>	
L-7	Wed 7 Sep	1.5	Errors and Convergence – 22,23,24
L-8	Fri 9 Sep	1.5	Aitken Acceleration and Polynomial Roots – 40,41,42

**Project One due Monday 12 September at 3PM**

L-9	Mon 12 Sep	1.6;7.1	Multiple Roots; Golden Section – 25,26,27
L-10	Wed 14 Sep	2.1	Introduction to Linear Algebra – 4,5,6
L-11	Fri 16 Sep	2.2	Elimination Methods – 11,13,14
L-12	Mon 19 Sep	2.2	LU Decomposition – 15,17,18,27
L-13	Wed 21 Sep	2.2	Cholesky Decomposition; Cost of Elimination – 21,28,30
L-14	Fri 23 Sep	2.2,4	Improve Stability by Pivoting – 25,29,35
L-15	Mon 26 Sep	2.4	Pivoting; Norms – 45,64,66
L-16	Wed 28 Sep	2.4	Norms and Condition Numbers – 42,43,46

**Project Two due Friday 30 September at 3PM**

L-17	Fri 30 Sep	1.7	Multidimensional Newton's Method – 46,47,48
L-18	Mon 3 Oct	3.1	Lagrange and Neville Interpolation – 1,6,8
L-19	Wed 5 Oct	<b>Review for Exam I</b>	
L-20	Fri 7 Oct	<b>Exam I on Chapters 0, 1, and 2</b>	
L-21	Mon 10 Oct	3.2	Divided Differences – 12,14,30
L-22	Wed 12 Oct	3.3-5	Splines – 33,35,37
L-23	Fri 14 Oct	3.6	Least Squares Approximation – 70,71,75
L-24	Mon 17 Oct	3.2	Conditioning and Errors – 59,60,61
L-25	Wed 19 Oct	4.1,2	Chebyshev Polynomials; Rational Approximations – 13,21,23

**Project Three due Friday 21 October at 3PM**

L-26	Fri 21 Oct	4.3	Fourier Series – 30,31,32
L-27	Mon 24 Oct	5.1	Interpolation for Derivatives and Integrals – 4,11,14
L-28	Wed 26 Oct	5.1	Richardson Extrapolation – 19,24,27
L-29	Fri 28 Oct	5.2	Newton-Cotes formulas; Composite Rules – 31,32,34
L-30	Mon 31 Oct	5.2	Romberg Integration – 35,37,40
L-31	Wed 2 Nov	5.6	Gaussian Quadrature – 71,73,75
L-32	Fri 4 Nov	<b>Review for Exam II</b>	
L-33	Mon 7 Nov	<b>Exam II on Chapters 3, 4, and 5</b>	
L-34	Wed 9 Nov	6.1,2	Taylor-Series and Euler Methods – 1,4,5,7

**Project Four due Friday 11 November at 3PM**

L-35	Fri 11 Nov	6.3,4	Runge-Kutta and Multistep Methods – 9,15,16
L-36	Mon 14 Nov	6.4	Predictor-Corrector Methods – 21,29,33
L-37	Wed 16 Nov	6.5,6	Higher-Order Equations and Systems – 40,43,44
L-38	Fri 18 Nov	6.7	The Shooting Method – 56,58,59
L-39	Mon 21 Nov	6.7	Finite Differences – 60,61,62
L-40	Wed 23 Nov	6.8	Characteristic-Value Problems – 72,74,76
	Fri 25 Nov	<b>Thanksgiving Holiday – no classes</b>	
L-41	Mon 28 Nov	Review of Chapters 0, 1, and 2	

**Project Five due Wednesday 30 November at 3PM**

L-42	Wed 30 Nov	Review of Chapters 3, 4, and 5	
L-43	Fri 2 Dec	Review of Chapter 6	

**Wednesday 7 December, 1:00–3:00PM: Final Exam – room to be announced.**