

MTH 235 Syllabus for Differential Equations and Linear Algebra, 2nd Edition, ©2007,
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⁺Show all row ops, and use only *elementary* row ops; Sections 3.5, 3.6 optional (in italics)

Time	Section	Topic	Problems (⁺ Notate all row operations)
1.5	2.1	Linear Differential Equations	2, 3, 10, 15, 18, 29, 33, 43, 44
1.5	2.2	First Order Linear Differential Eqs.	3, 15, 18, 19, 23, 26, 29, 35
2.5	2.4	Linear Models: Mixing and Cooling	4, 6, 7, 8, 10, 16, 17, 21
1	2.5	Logistic Differential Equation	11, 14, 15, 17, 29, 31
1.5	3.1	Matrices: Sums and Products	8, 11, 14, 18, 23, 44, 46, 61, 62, 68, 73
2	3.2	Systems of Linear Equations	14, 19, 20 ⁺ , 25 ⁺ , 32 ⁺ , 39, 52, 53 ⁺ , 63, 79 [Write system in form $Ax = 0$] <i>*Find and state both a REF and the RREF</i>
1.5	3.3	Matrix Inverse	2, 5 ⁺ , 6 ⁺ , 10 ⁺ , 11, 15, 21, 27, 28, 39, 46
2	3.4	Determinants and Cramer's Rule	1, 6, 12, 17, 20, 24, 29, 31, 33, 36, 40, 41
1.5	3.5 3.6	<i>Vector Spaces and Subspaces (omit spaces M_{mn} and P_n) Span and Basis</i>	<i>To be announced</i>
1.5	4.1	Second Order Linear Differential Equations	4, 9, 13, 24, 25, 26, 28, 34, 45, 46, 49
2	4.2	Real Roots of the Characteristic Equation	5, 6, 11, 16, 20, 49, 51, 52, 56, 58, 63, 64
2.5	4.3	Complex Roots of the Characteristic Equation	5, 11*, 12*, 13*, 22, 25, 26, 44, 50a, 52 [See eq. (19) on p. 241], 63 [*Also write solutions in amplitude-phase form]
2.5	4.4	Undetermined Coefficients	10, 16, 20, 25, 26, 32, 34, 43, 49
1.5	4.5	Variation of Parameters	3, 4, 5, 8, 13, 14
2.5	4.6	Forced Oscillations	3, 6, 7, 8, 9, 10, 13, 14, 21, 22, 23, 33, 34
1.5	8.1	Laplace Transform and its Inverse	3, 8, 12, 15, 24a, 33, 34, 41, 44, 47, 52
2	8.2	Solving DE's by Laplace Transform	3, 7, 8 [change $\cos(3t)$ to $\cos(2t)$], 10, 12, 13
2	8.3	Step Function and Delta "Function"	1, 2, 11, 12, 20, 23, 28, 34, 35, 40, 47, 52
1.5	8.4	Convolution Integrals and Transfer Functions	7, 10 [Hint: consider separately the cases $a=0$, $a \neq 0$], 14, 15, 16, 21, 26, 27, 38
1	2.6	Theory of Linear DE Systems	3abd, 6abd, 10, 11, 18abd
2	6.1	Systems of Linear Differential Equations	3, 7, 8, 11, 20, 22
2.5	5.3	Eigenvalues and Eigenvectors	5, 6, 10, 15, 19, 21, 22, 30, 37, 38, 40, 55, 73
2	6.2	Real Eigenvalues	11, 16, 23, 28, 29, 32, 43, 51
2	5.4	Diagonalization (omit "coordinates" on pp. 327-332)	25, 28, 31, 43, 44, 49abd, 55, 56
0.5	6.5	Decoupling	1, 4, 13
44.5	Total		