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| **SES #** | **TOPICS** | **EDITION 4** | **EDITION 5** | **Key Dates** |
| **1** | **The geometry of linear equations** | **1.1-2.1** | **﻿1.1-2.1** |  |
| **2** | **Elimination with matrices** | **2.2-2.3** | **2.2-2.3** |  |
| **3** | **Matrix operations and inverses** | **2.4-2.5** | **﻿2.4-2.5﻿** |  |
| **4** | ***LU* and *LDU*factorization** | **2.6** | **﻿2.6﻿** |  |
| **5** | **Transposes and permutations** | **2.7** | **﻿2.7﻿** | **Set 1 Due** |
| **6** | **Vector spaces and subspaces** | **3.1** | **﻿3.1﻿** |  |
| **7** | **The nullspace: Solving Ax = 0** | **3.2** | **﻿3.2﻿** |  |
| **8** | **Rectangular *PA*= *LU* and Ax = b** | **3.3-3.4** | **3.3** | **Set 2 Due** |
| **9** | **Row reduced echelon form** | **3.3-3.4** | **3.3** |  |
| **10** | **Basis and dimension** | **3.5** | **3.4** |  |
| **11** | **The four fundamental subspaces** | **3.6** | **3.5** | **Set 3 Due** |
| **12** | **Exam 1: Chapters 1 to 3.4** |  |  |  |
| **13** | **Graphs and networks** | **8.2** | **3.5, 10.1** |  |
| **14** | **Orthogonality** | **4.1** | **4.1** | **Set 4 Due** |
| **15** | **Projections and subspaces** | **4.2** | **4.2** |  |
| **16** | **Least squares approximations** | **4.3** | **4.3** |  |
| **17** | **Gram-Schmidt and *A* = *QR*** | **4.4** | **4.4** | **Set 5 Due** |
| **18** | **Properties of determinants** | **5.1** | **5.1** |  |
| **19** | **Formulas for determinants** | **5.2** | **5.2** |  |
| **20** | **Applications of determinants** | **5.3** | **5.3** | **Set 6 Due** |
| **21** | **Eigenvalues and eigenvectors** | **6.1** | **6.1** |  |
| **22** | **Diagonalization** | **6.2** | **6.2** |  |
| **23** | **Markov matrices** | **8.3** | **10.3** | **Set 7 Due** |
| **25** | **Exam 2: Chapters 1-5, 6.1-6.2, 8.2** |  |  |  |
| **26** | **Differential equations** | **6.3** | **6.3** |  |
| **27** | **Symmetric matrices** | **6.4** | **6.4** |  |
| **28** | **Positive definite matrices** | **6.5** | **6.5** |  |
| **29** | **Matrices in engineering** | **8.1** | **10.2** | **Set 8 Due** |
| **30** | **Similar matrices** | **6.6** | **6.2** |  |
| **31** | **Singular value decomposition** | **6.7** | **7.1-7.2** | **Set 9 Due** |
| **32** | **Fourier series, FFT, complex matrices** | **8.5, 10.2-10.3** | **10.5, 9.2-9.3** |  |
| **33** | **Linear transformations** | **7.1-7.2** | **8.1-8.2** |  |
| **34** | **Choice of basis** | **7.3** | **8.3** | **Set 10 Due** |
| **35** | **Linear programming** | **8.4** | **10.4** |  |
| **37** | **Exam 3: Chapters 1-8 (8.1, 2, 3, 5)** |  |  |  |
| **38** | **Numerical linear algebra** | **9.1-9.3** | **11.1-11.3** |  |
| **39** | **Computational science** | **See the Web site for**[**18.085**](http://ocw.mit.edu/courses/mathematics/18-085-computational-science-and-engineering-i-fall-2008/) |  |  |