Topics to be covered in Atkinson's linear algebra course

In each section, the problems listed before the first occurrence of a * are routine, computational problems. The first two * problems are typically True–False. The remaining problems are typically slightly more involved. A nice feature of this book is that very few problems are tricky: consider all problems approachable!

Section	Practice problems
Week 1	
1.1: Systems of linear equations	1-4, 7-10, 11-14, 15, 17, 19, 21, 23*, 24*
1.2: Row reduction and echelon form	1-14, 15, 17, 19, 21*, 22*, 23*-31*
Week 2	
1.3: Vector equations	1-10, 11, 13, 15, 17, 21*, 23*, 24*, 25, 32
1.4: The matrix equation $A\mathbf{x} = \mathbf{b}$	1-9, 11, 13, 15, 17-20, 23*, 24*, 25, 29, 32*
1.5: Solution sets of linear systems	1-4, 5, 7-12, 13, 15, 17, 18, 19, 21, 23*, 24*, 25*, 27*, 28-31, 33, 34
Week 3	
1.7: Linear independence	1-8, 9, 11, 13, 15-20, 21*, 22*, 23-26, 30*, 31*, 33*, 35*, 37*, 39*
1.8: Introduction to linear transformations	1-6, 7, 9, 11, 13-16, 17, 18, 19, 21*, 22*, 23*, 25*, 29, 31*, 34, 37
1.9: The matrix of a linear transformation	1-10, 13, 15, 17, 19, 21, 23*, 24*, 25, 27, 29-32, 33*, 35*
Week 4	
2.1: Matrix operations	1-12, 13, 15*, 16*, 17, 19, 21, 23*, 25*, 27
2.2: The inverse of a matrix	1-7, 9*, 10*, 13*, 15*, 19, 21*, 22*, 23*, 24*, 25*, 26*, 29-33
Week 5	
2.3: Characterizations of invertible matrices	1-8, 11*, 12*, 13*, 15*, 17*, 19*, 21*, 25*, 33-34, 35*
EXAM 1	Friday, September 28
Week 6	
3.1: Introduction to determinants	1-18, 19-24, 31, 32, 39*, 40*, 41
3.2: Properties of determinants	1-14, 15, 17, 19, 21, 23, 25, 27*, 28*, 29, 31*, 33*, 35*, 37, 39, 41-42
3.3: Cramers rule, volume, and linear transformations	1-16, 19, 21, 23, 25*, 27, 29, 30, 31*
Week 7	
4.1: Vector spaces and subspaces	1-4, 5-8, 9, 11, 13, 15, 17, 20*, 21, 23*, 24*, 25*, 26*, 27*, 28*, 31*, 33*
4.2: Null spaces, column spaces, and linear transformations	1-6, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25*, 26*, 27*, 29*, 31
Week 8	
4.3: Linearly independent sets: bases	1-14, 15, 16, 19, 21*, 22*, 23*, 25*, 29*, 31*, 32*, 33

4.4: Coordinate systems	1-13, 15*, 16*, 17, 19*, 21, 23*, 24, 27, 29, 31
Week 9	
Spring Break	
Week 10	
4.5: The dimension of a vector space	1-12, 13, 15, 17, 19*, 20*, 25*, 27*, 29*, 30*
4.6: Rank	1-16, 17*, 18*, 19*, 21*, 25*, 27, 28-29
Week 11	
4.7: Change of basis	1-10, 11*, 12*, 13, 15*-16*
5.1: Eigenvectors and eigenvalues	1-19, 21*, 22*, 23*, 25*, 28*, 29*, 31, 32, 35
EXAM 2	Friday, November 9
Week 12	
5.2: The characteristic equation	1-17, 19*, 21*, 22*
5.3: Diagonalization	1-6, 7-19 odd, 21*, 22*, 23*, 25*, 27*, 31*, 32*
5.4: Eigenvectors and linear transformations	1-18, 19*, 21*, 25, 26*
Week 13	
5.5: Complex eigenvalues	1-20, 21, 25*, 26*
Week 14	
6.1: Inner product, length, and orthogonality	1-18, 19*, 20*, 23, 24*, 25*, 27*-29*, 30*
Week 15	
6.2: Orthogonal sets	1-22, 23*, 24*, 25*, 27*, 33, 34
6.3: Orthogonal projections	1-15, 17, 19, 21*, 22*
EXAM 3	Friday, December 7
Week 16	
6.4: The Gram-Schmidt process	1-14, 17*, 18*