



Course Schedule – Multivariable Calculus and Linear Algebra

This schedule and assignments are subject to revision. First semester: the section and chapter numbers in the assignments are from Calculus, A New Horizon, 6th ed., vol. 3, by Anton. Second semester: the section and chapter numbers in the assignments are from Elementary Linear Algebra, Applications Edition, 7th ed. by Anton.

<i>Week of</i>	<i>Topics</i>	<i>Reading Assignments</i>
September 6	3-D Space and Vectors.	Section 13.1, problems 7, 9, 15, 25, 33;
September 13	3-D Space and Vectors.	Section 13.2, problems 3a) & d), 7a) & c), 15a), b), & e), 29, 38, 41; Section 13.3, problems 3, 7, 13, 17, 21, 32, 39; Section 13.4, 7, 9, 10, 13, 19, 23, 33a);
September 20	3-D Space and Vectors.	Section 13.5, problems 3b), 5b), 13, 21, 27, 39, 45; Section 13.6, problems 11, 13a) & c), 15a) & c), 17a), 19, 36, 37, 39, 43 ; Section 13.7, problems 3 a), b), c), 7, 15, 31, 45, 49;
September 27	3-D Space and Vectors. Test 1. Vector-valued functions.	Section 13.8, problems 15, 19, 23, 27, 29, 33, 39, 43; Section 14.1, problems 3, 13, 17, 19, 27, 33, 39, 47;
October 4	Vector-valued functions.	Section 14.2, problems 5, 9, 15, 19, 25, 35, 43, 53; Section 14.3, problems 3, 9, 11, 17, 23, 32, 33; Section 14.4, problems 5, 7, 19, 21;

October 11	Vector-valued functions.	Section 14.5, problems 7, 10, 13, 17a), 27, 33, 47, 61; Section 14.6, problems 7, 13, 15, 17, 25, 33, 41, 43, 47, 57, 61, 62; Section 14.7, problems 3, 5, 6, 7, 11 ;
October 18	Test 2. Partial derivatives	Section 15.1, problems 7, 13, 17, 19a) & b), 27, 33, 50, 53; Section 15.2, problems 7, 11, 13, 17, 19b), 23, 27, 31;
October 25	Partial derivatives.	Section 15.3, problems 5, 7, 13, 25, 43, 47, 73, 78; Section 15.4, problems 5, 11, 21, 25, 39, 43, 50; Section 15.5, problems 5, 7, 9, 11, 17, 21, 23, 31, 35;
November 1	Test 3. Partial derivatives.	Section 15.6, problems 3, 9, 13, 17, 23, 27, 31, 41, 53, 55; Section 15.7, problems 3, 7, 11, 17, 21, 35, 39, 53a) & e);
November 8	Partial derivatives.	Section 15.8, problems 9, 17, 25, 27, 31, 34, 39, 43; Section 15.9, problems 1, 7, 9, 12, 15;
November 15	Test 4. Multiple integrals.	Section 16.1, problems 5, 7, 11, 15, 23, 27, 33; Section 16.2, problems 5, 11, 13, 21 (wrong answer in back of book), 25, 33, 35, 49;
November 22	Multiple integrals.	Section 16.3, problems 5, 7, 11, 15, 20, 21, 25, 36;
November 29	Multiple integrals. Test 5.	Section 16.4, problems 3, 9, 17, 25 (don't graph), 31, 37, 43; Section 16.5, problems 3, 7, 11, 17, 23, 25;
December 6	Multiple integrals.	Section 16.6, problems 3, 13, 18, 31, 37; Section 16.7, problems 3, 7 (wrong answer in book), 11, 21, 23, 31 ; Section 16.8, problems 3, 7 , 9, 17, 19, 33;
December 13	Test 6. Vector Calculus.	Section 17.1, problems 3, 15, 17, 27, 28, 37b), 38a), 43; Section 17.2, problems 3, 9, 13, 21, 25, 31, 36;

December 20	Vector Calculus	Section 17.3, problems 7, 11, 15, 19, 28a);
December 23–January 2	Winter Break	Have Fun!
January 3	Vector Calculus.	Section 17.4, problems 3, 9, 19, 21; Section 17.5, problems 3, 7, 11, 15, 21 ; Section 17.6, problems 2, 9, 13, 14;
January 10	Vector Calculus. Test 7.	Section 17.7, problems 1, 7; Section 17.8, problems 1, 5, 7;
January 17	Review. Exam.	
January 24	High School Exams	No new assignments.
January 31	Systems of linear equations. Gaussian Elimination. Matrices and Matrix Operations. Inverses and Matrix Arithmetic.	Section 1.1 (read only) Section 1.2, problems 1, 3, 5a) & d), 6b), 7b), 11c), 17 Section 1.3, problems 1, 2, 3a), e) & i), 4e) & h), 5a), g) & i), 7a) & d), 16a) Section 1.4, problems 4, 5, 11, 15
February 7	Elementary Matrices and Inverses. Special Matrices.	Section 1.5, problems 1, 3, 7b) & c), 8b), & c), 10, 15 Section 1.6, problems 5, 9, 11 (doubly augment), 17, 22, 23 Section 1.7, problems 2a), 4, 5, 8, 11, 17, 18, 19
February 14	LU-Decomposition. The Determinant.	Section 9.9, problems 2, 5, 11a Section 2.1, problems 7, 9, 13a), 18, 19, 21 Section 2.2, problems 2, 3, 7, 9, 12, 13
February 21	Properties of the Determinant. Cramer's Rule. Review.	Section 2.3, problems 3, 4b) & c), 5, 8, 10, 14, 15a) & b), 18 Section 2.4, problems 1, 4, 6, 7, 13, 17, 25
February 28	Test 1. Euclidean n-space. Linear Transformations in Euclidean space.	Section 4.1, problems 3, 4, 8, 15, 17b), 18a), 22 Section 4.2, problems 3, 5a), 12, 17a) & c), 19b) (wrong answer in book), 20

March 7	Properties of Linear transformations. General Vector Spaces. Subspaces.	Section 4.3, problems 1, 4, 5a), 6a), 9, 13, 18a) & c), 20 Section 5.1, problems 1, 5, 10, 15 Section 5.2, problems 3, 6b), d), & f), 8a) & b), 11a) & c), 12, 14a) & c), 17
March 14	Linear Independence. Basis and Dimension. Row, Column and Nullspace.	Section 5.3, problems 2, 3a) & b), 4a), 7, 14, 20a) & c) Section 5.4, problems 3, 5, 6, 7b), 8a), 16, 18, 27a) & b), 29 Section 5.5, problems 3c), 5b), 6c), 8c), 9c), 12a)
March 21	Rank and Nullity. Review. Test 2.	Section 5.6, problems 2c), 3c), 4, 7a), b), d) & f), 9, 11, 15a)
March 28	Inner Products. Angle and Orthogonality in Inner Product Spaces.	Section 6.1, problems 3, 4a), 6, 9b) & c), 15a), 17, 21 Section 6.2, problems 4, 9, 13, 14, 16a), 19, 20, 30
April 4	Spring Break	Have fun
April 11	Orthonormal Bases. Gram-Schmidt Process. QR Decomposition. Approximation and Least Squares Solution.	Section 6.3, problems 3, 4, 7, 10b), 12, 16a), 18, 24a) & c), 29 Section 6.4, problems 1a), 3b), 4a), 9 Section 9.3, problems 4, 8 Section 9.4, problems 1, 4
April 18	Orthogonal Matrices. Change of Basis. Review.	Section 6.5, problems 1a), 2, 3b) & c), 5b), 6a), 11, 16
April 25	Test 3. Eigenvalues and Eigenvectors	Section 7.1, problems 4a) & c), 5a) & c), 6a) & c), 11, 20
May 2	Diagonalization. Systems of Differential Equations.	Section 7.2, problems 2, 5, 11, 18 Section 7.3, problems 1a) & c), 6, 11 Section 9.1, problem 3
May 9	General Linear Transformation. Kernel and Range Inverse Linear Transformations.	Section 8.1, problems 3, 5, 15, 16, 19, 22 Section 8.2, problems 3, 4, 7a) & b), 16, 24 Section 8.3, problems 1a), c) & e), 3a) & c), 7, 10a) & b), 12
May 16	Matrix of the General Linear Transformation.	Section 8.4, problems 2, 6, 11a) & b), 13a) & b) (typo)

May 23	Similarity. Review. Test 4.	Section 8.5, problems 2, 8, 13.
May 30	Review. Exams	