SM286A   SYLLABUS   FALL 2015

Text: Fundamental Methods of Mathematical Economics (4th ed.) – Chiang and Wainright

Lesson	Day	Date	Section	Problems
1	M	8/24	3.1: The meaning of equilibrium 3.2: Partial market equilibrium-a linear model	3.2: 1-5
2	W	8/26	3.3: Partial market equilibrium-a nonlinear model	3.3: 2,4,6
3	F	8/28	4.1: Matrices and vectors 4.2: Matrix operations	4.1: 1 4.2: 1-5,6be
4	M	8/31	4.3: Notes on vector operations	4.3: 1acd,
5	W	9/2	4.4: Commutative, associative and distributive laws 4.5: Identity matrices and null matrices 4.6: Transposes and inverses	4.4: 1a,3,5a 4.5: 1,2,3ab 4.6: 1,2,4
6	F	9/4	Review	
7	T	9/8	5.1: Conditions of nonsingularity of a matrix RREF handout	5.1: 3,4,5ac RREF:
8	W	9/9	RREF handout	RREF:
9	F	9/11	5.2: Test of nonsingularity by use of determinant 5.3: Basic properties of determinants	5.2: 1ace,2,3,4a 5.3: 1,3,4ab
10	M	9/14	5.4: Finding the inverse matrix 5.5: Cramer's rule	5.4: 2ac,4ac,6a,7 5.5: 1ab,2ab
11	W	9/16	5.6 (pp.107-108): Market model, national-income model	5.6: 1
12	F	9/18	5.7: Leontief input-output models	5.7: 1-4
13	M	9/21	Review	
14	W	9/23	Review	
15	F	9/25	Test 1	
16	M	9/28	15.1: First order linear DE with constant coefficients	15.1: 1ac,2ac,3a,4a
17	W	9/30	15.2: Dynamics of market price	15.2: 1,3,4
18	F	10/2	15.3: Variable coefficients	15.3: 1-4
19	M	10/5	15.4: Exact DE	15.4: 1ab,2
20	W	10/7	15.5: Nonlinear DE of 1st order and 1st degree	15.5: 1-3
21	F	10/9	15.6: The qualitative-graphic approach	15.6: 1ac,2,3
22	W	10/14	15.7: Solow growth model	15.7: handout
23	F	10/16	Review	
24	M	10/19	17.1: Discrete time, differences and difference	17.2: 1-4

			equations 17.2: Solving a 1st order difference equation	
25	W	10/21	17.3: The dynamic stability of equilibrium	17.3: 1ab,2a,3a
26	F	10/23	17.4: The cobweb model	17.4: 2,3
27	M	10/26	Review	
28	W	10/28	Test 2	
29	F	10/30	11.6: Motivating examples : 11.2: Extreme values of a function of two variables	11.2: 1,2
30	M	11/2	11.3: Determinant review Quadratic forms, positive/negative definiteness	11.3: 1ac,2c
31	W	11/4	11.3: Second-order conditions, the Hessian	11.3: 3ac,4abe,5abe
32	F	11/6	11.4: Generalization to n variables	11.4: 1-4,5a
33	M	11/9	11.5: Convex and concave functions Convex sets	11.5: 1-6
34	F	11/13	11.6: Solving the motivating examples	11.6: 1-3
35	M	11/16	Review	
36	W	11/18	12.1: Effects of a constraint 12.2: Solving by substitution	
37	F	11/20	12.2: Lagrange multiplier method Shadow price interpretation of Lagrange multiplier	12.2: 1-3
38	M	11/23	12.3: Second-order conditions, the bordered Hessian	12.3: 1
39	W	11/25	12.3: Generalizations: n variables and 1 equality constraint, n variables and m equality constraints	
40	M	11/30	12.5: Utility maximization 12.7: Least-cost combination of inputs	12.5: handout 12.7: handout
41	W	12/2	Review	
42	F	12/4	Review	
43	M	12/7	Test 3	
44	W	12/9	Review	

Student Learning Outcomes: Learning Goals and Objectives for Mathematics for Economics (SM286A):

Upon successful completion of this course, students are able to do the following:

1. Perform basic operations with matrices.
2. Solve simple equilibrium models in economics using matrix methods.
3. Apply the theory of first order differential equations and difference equations to analyze growth models in economics.
4. Apply the theory of constrained optimization to problems involving utility maximization or least-cost combination of inputs.