

Tentative

Department of Mathematics, KFUPM

Math 436 Syllabus (Term 221)

Instructor: Khaled M. Furati

- Course Title:** Discrete Models
- Course Description:** Difference equations and discrete dynamical systems, linear and nonlinear models, linear and nonlinear systems, stability and well-posedness, models and numerical experiments from different fields of science and engineering.
- Prerequisite:** Math 202 or Math 208
- Textbook:** Difference Equations: Theory, Applications & Adv Topics, Mickens, 3rd ed, 2015.
- Learning Outcomes:** Upon completion of this course, students should be able to
1. Classify difference equations
 2. Solve linear difference equations
 3. Compute the solution of difference equations
 4. Compute the solution of discrete dynamical systems
 5. Analyze the stability of equilibria
 6. Interpret the behavior of the solutions
- Assignment:** Homework 35%, Midterm Exam 30%, and Final Exam 35%.

WK	Date	Chap	Topics	HW
1	Aug 28-Sep 01	1	Difference calculus	See BB
2	Sep 04-08	2	First-order difference equations	
3	Sep 11-15			
4	Sep 18-22	3	Linear difference equations	
5	Sep 25-29			
6	Oct 02-06			
7	Oct 09-13	4	Linear eqn with constant coefficients	
8	Oct 16-20			
9	Oct 23-27			
10	Oct 30-Nov 03	6	Nonlinear difference equations	
11	Nov 06-10			
12	Nov 13-17			
13	Nov 20-24	7	Applications	
14	Dec 04-08			
15	Dec 11-15		Review	