DIFFERENCE EQUATIONS

1	Course Title:	DIFFERENCE EQUATIONS
2	Course Code:	MAT4068
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	8
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. EMRULLAH YAŞAR
15	Course Lecturers:	Dr. Öğretim Üyesi Nisa ÇELİK
16	Contact information of the Course Coordinator:	e-posta:caglayan@uludag.edu.tr Telefon:0224 29 41 752 Adres:U.Ü Fen-Edb. Fak. Mat. Böl. Görükle Bursa
17	Website:	
18	Objective of the Course:	Introduce to difference equations and its theory.
19	Contribution of the Course to Professional Development:	Gain the background to follow new developments in the field of difference equations
20	Learning Outcomes:	

	1	Learns the structure of difference equations.
	2	Learns first-order linear difference equations and solution methods .
	3	Knows difference equations with constant and variable coefficients.
	4	Learns the method of undetermined coefficients for difference equations.
	5	Learns the variation of parameters method of difference equations.
	6	Understands the Z-transform, theory of linear systems and stability.
	7	
	8	
	9	
	10	

21	Course Content:

Course Content:

Week	Theoretical	Practice
1	Introduction and Necessary Preliminaries	
2	Difference and Shift Operators	
3	Summation	
4	Generating Functions	

5	First Order Equations, Linear Equations	
6	Equations with Constant Coefficients	
7	Equations with Variable Coefficients	
8	Midterm Exam and General Review	
9	Nonlinear Eauations	
10	Z-transformations and Applications	
11	Convolution	
12	Linear Systems	
13	Stability I	
14	Stability II	

22	Textbooks, References and/or Other Materials:	
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	3.00	42.00
Homeworks	14	3.00	42.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	6.00	6.00
Others	6	7.00	42.00
Final Exams	1	6.00	6.00
Total Work Load			186.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

Total 100.00

Course to wait for a certain period of time to determine the level of the students. Creating a discussion environment (question subject.

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0
ÖK2	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0
ÖK3	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0
ÖK4	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0

ÖK5	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0
ÖK6	4	4	1	1	1	1	1	1	1	1	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**