ESOGÜ Mathematics and Computer Science Department
COURSE INFORMATION FORM

SEMESTER	Spring

COURSE CODE	821618034	COURSE NAME	Difference Equations II

SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
8	2	2	0	3	5	COMPULSORY (x) ELECTIVE ( )	Turkish

COURSE CATAGORY			
Mathematics	Computer	[if it contains considerable design, mark with (√)]	
√			

ASSESSMENT CRITERIA			
	Evaluation Type	Quantity	%
MID-TERM	1st Mid-Term		
	2nd Mid-Term		
	Quiz		
	Homework	1	40
	Project		
	Report		
	Others (……)		
FINAL EXAM		1	60

PREREQUIEITE(S)	None.
COURSE DESCRIPTION	Derivation of Difference Equations, First-Order Difference Equations, Linear Difference Equations, Linear Difference Equations with Constant Coefficients, Homogenous and Nonhomogeneous Difference Equations with Constant Coefficients, Nonlinear Difference Equations, Applications, Separable Variable Method, Difference-differential equations.
COURSE OBJECTIVES	The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develope skills in applying those concepts and techniques to the solution of problems
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	The understanding subjects and equations, saying more different notations
COURSE OUTCOMES	Learn about the basic concepts of difference equations. Create the difference equations. Solve first-order difference equations. Can interprate the obtained solutions. Can solve high-order linear difference equations. Can resolve non-linear difference equation. Learns the application areas of difference equations.
TEXTBOOK	Hüseyin BEREKETOĞLU, Vildan KUTAY, (2012) Fark Denklemleri, Gazi Kitabevi, Ankara
OTHER REFERENCES	Saber N. ELAYDI, (1995) An Introduction to Difference Equations, Springer (2001) Difference Equations: an introduction with applications, Academic Press
TOOLS AND EQUIPMENTS REQUIRED	None.

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Fundamantel Definitions
2	Difference computation
3	Derivation of Difference Equations
4	First-Order Linear Difference Equations
5	High-Order Linear Difference Equations
6	Homogenous Difference Equations with Constant Coefficients
7	Problem Solving
8	Midterm.
9	Nonhomogeneous Difference Equations with Constant Coefficients
10	Separable Variable Method
11	Non-Linear Difference Equations which is convertible to Linear Difference Equations
12	Stability For Linear Difference Equations
13	Linear Difference Equations Systems
14	Difference-differential equations
15	Problem Solving
16,17	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	The ability to apply knowledges of Mathematics - Computer,	**X**		
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,		**X**	
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,		**X**	
4	The skill to solve and design a problem process in accordance with a defined target,	**X**		
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,		**X**	
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	**X**		
7	The skill to make team work within the discipline and interdisciplinary,		**X**	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics - Computer,	**X**		
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,		**X**	
10	The skill to have professional and ethical responsibility,		**X**	
11	The skill to have consciousness for quality issues and scientific research,	**X**		
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,		**X**	
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,		**X**	
14	The skill to developed design of software systems at different complex levels,	**X**		
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.		**X**	
1:None. **2**:Partially contribution. **3**: Completely contribution.				

Instructor(s): Doç.Dr. Ömer Ünsal

Signature: **Date:**