



ESOGÜ Mathematics and Computer Science Department
COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	821617032	COURSE NAME	Difference Equations I
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			LANGUAG E
	Theory	Practice	Labratory	Credit	ECTS	TYPE	
7	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.
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COURSE DESCRIPTION	The Main Purpose of This Course is to Introduce the Foundation Principles of Difference Equations. Fundamantel Definitions and Theorems with Difference Equations. Definitions of Operator Δ . Properties of Operator Δ . Inverse Operator, Definitions of Operator E . Properties of Operator E . Divided Difference.
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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 develop skills in applying those concepts and techniques to the solution of problems
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ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	The understanding subjects and equations, saying more different notations
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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.
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TEXTBOOK	Hüseyin BEREKETOĞLU, Vildan KUTAY, (2012) Fark Denklemleri, Gazi Kitabevi, Ankara
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OTHER REFERENCES	Saber N. ELAYDI, (1995) An Introduction to Difference Equations, Springer (2001) Difference Equations: an introduction with applications, Academic Press
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TOOLS AND EQUIPMENTS REQUIRED	None.
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COURSE SYLLABUS	
WEEK	TOPICS
1	The Main Purpose of This Course is to Introduce the Foundation Principles of Difference Equations
2	Fundamental Definitions and Theorems with Difference Equations.
3	Finite difference operator
4	Definitions of Operator Δ . Properties of Operator Δ .
5	Definitions of Operator ∇ . Properties of Operator ∇ .
6	Definitions of Operator E . Properties of Operator E .
7	Problem Solving
8	Midterm.
9	Definitions of Operator δ . Properties of Operator δ .
10	Inverse Operator and Properties
11	Divided difference, Factorial functions.
12	Derivative and differential operator
13	Finite difference equations, Create of finite difference equations
14	Difference equation derived from differential equation.
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 algorithms 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: