ESOGÜ MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT COURSE INFORMATION FORM

SEMESTER	FALL

COURSE CODE	821617017	COURSE NAME	Differential Equations with Mathematica I

SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
7	2	2		3	5	COMPULSORY ( ) ELECTIVE (X)	TURKISH

COURSE CATAGORY

		[if it contains considerable design, mark with (√)]	
		X	

ASSESSMENT CRITERIA

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

PREREQUIEITE(S)	NONE
COURSE DESCRIPTION	We give a brief summary of ordinary differential equations (ODEs). We use a computer package programs called Mathematica in order to obtain solutions of ODEs. We also produce package programs for solving some other ODEs. Subjects to be studied as follows: 1. Definition, classification and solutions of ODEs and initial-value problems for ODEs, 2. First order ODEs and their applications. 3. Higher order ODEs and their applications
COURSE OBJECTIVES	Learning how to use Mathematica package program to solve first and higher order ODEs.
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	Understanding fist and higher order ODEs , using Mathematica to obtain solutions of fist and higher order ODEs.
COURSE OUTCOMES	1. Learning how to use the Mathematica packet program related to ordinary differential equations. Learning how to solve initial-value problems for higher order ordinary differential equations using Mathematica packet program.
TEXTBOOK	M.N.Özer, D.Eser (2002), Diferensiyel Denklemler(Teori ve Uygulamaları) Birlik offset, Eskişehir. S.Wolfram,(1991),Mathematica, Asystems for doing mathematics by computer, AWP Comp. NewYork.
OTHER REFERENCES	M.N.Özer, D.Eser (2002), Diferensiyel Denklemler(Teori ve Uygulamaları) Birlik offset, Eskişehir. D.G. Zill (1992) Diff. Equations with Boundary-value. Problems,PWS, Kent. E.D. Rainville, P.E. Bedient(1989), Elem. Diff. Eqs. MPC, New York. S.L.Ross (1989) Introduction To ODEs, MPC, New York.

TOOLS AND EQUIPMENTS REQUIRED	None

WEEK	TOPICS
	COURSE SYLLABUS
1	Introduction to ordinary differential equations, Definition, classification and solutions of ODEs.
2	Initial-value problems for ODEs and their solutions
3	Learning how to use Mathematica package program
4	Saving and copying files in Mathematica
5	Loading files and programs in Mathematica
6	First order ODEs , Applications of first order ODEs
7	How to solve first order ODEs using Mathematica
8	Midterm
9	How to solve initial-value problems for first order ODEs using Mathematica
10	Higher order ODEs, Applications of higher order ODEs
11	How to solve higher order ODEs using Mathematica
12	How to solve initial-value problems for higher order ODEs using Mathematica
13	Graphical representation of solutions
14	General review
15,16	Final exam.

NO	Preparation for Final Examination	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):   Assoc. Prof. Dr. Sait SAN

Signature: **Date:**