

## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Numerical Analysis								
Course Code		ZTM526		Couse Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	204 (Hours)	Theory	/	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of course is to define the properties of numerical analysis and give examples about numerical applications in the agricultural machinery.								
Course Content		In this course, numerical analysis, the error, the definition of the concept of the algorithm, matrix, numerical analysis of linear and non-linear equations, finite difference are discussed.								
Work Placement		N/A								
Planned Learning Activities		and Teaching	Methods	Explan	ation	(Presentat	tion), Discussio	on, Individual S	Study, Problem	Solving
Name of Lecturer(s)										

### **Assessment Methods and Criteria**

Midterm Examination140Final Examination160	Method	Quantity	Percentage	(%)
Final Examination 1 60	Midterm Examination	1	40	
	Final Examination	1	60	

# **Recommended or Required Reading**

1	Sayısal Çözümleme-1 ODTÜ Bilgisayar Müh. Bölümü, Ziya AKTAŞ vd.,1981	
2	Numerical Methods John H. Mathews, 1992	
3	Numerical Methods for Engineers, Steven C. Chapra et all.1990	

Week	Weekly Detailed Course Contents					
1	Theoretical	Definition and objectives of numerical analysis				
	Preparation Work	Research				
2	Theoretical	The concept of the error				
	Preparation Work	Research				
3	Theoretical	The concept of the algorithm				
	Preparation Work Research					
4	Theoretical	Numerical analysis of matrix				
	Preparation Work	Research				
5	Theoretical	Numerical analysis of matrix				
	Preparation Work	Research				
6	Theoretical	Numerical Analysis of Linear and Non-Linear Equations				
	Preparation Work	Research				
7	Theoretical	Numerical Analysis of Linear and Non-Linear Equations				
	Preparation Work	Research				
8	Intermediate Exam	Midterm exam				
9	Theoretical	Numerical Analysis of Linear and Non-Linear Equations				
	Preparation Work	Research				
10	Theoretical	Numerical Vector Analysis Operations				
	Preparation Work	Research				
11	Theoretical	Interpolation and Numerical Approximation Methods				
	Preparation Work	Research				
12	Theoretical	Numerical Differentiation and Integration				
	Preparation Work	Research				
13	Theoretical	Numerical Differentiation and Integration				
	Preparation Work	Research				
14	Theoretical	Finite difference				
	Preparation Work	Research				
15	Theoretical	Finite difference				



15	Preparation Work	Research	
16	Final Exam	Final exam	

# Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	2	84
Lecture - Practice	14	0	2	28
Assignment	14	0	2	28
Term Project	1	0	20	20
Midterm Examination	1	20	2	22
Final Examination	22			
	204			
	8			

\*25 hour workload is accepted as 1 ECTS

## Learning Outcomes

1	The ability to think mathematically and multi-dimensional
2	The ability to define and solve the problem
3	The ability to create a mathematical model
4	The ability to apply mathematical solutions in engineering fields.
5	The ability to apply mathematical solutions in engineering fields.

#### Programme Outcomes (Agricultural Machinery Master)

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1	Identification, formulation and solving the problems in the field of Agricultural Machinery
2	The ability to use modern engineering tools and techniques
3	The ability to use the information, which is obtained by following the scientific and technological developments, in the academic life and practice.
4	The ability to evaluate multi-faced relationship between them by understanding interaction among agricultural technology, soil, plants and animals
5	Professionalism and ethical responsibility
6	The ability to work in disciplinary and multi-disciplinary teams
7	The ability to communicate effectively
8	The ability to do research for accessing information and to use data base and other resources
9	The ability to do analyze and interpret the experimental results and the design of experiment
10	The ability to identify and interpret knowledge of current professional issues and events
11	The ability to get aware the universal and social effects of engineering solutions and applications
12	Accordance with the requirements of science and technology, ability to use scientific knowledge creative

## Contribution of Learning Outcomes to Programme Outcomes 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

	L1	L2	L3	L4
P1	5	5	5	5
P2	5	5	5	5
P3	5	5	5	5
P4	5	5	5	5
P5	4	4	4	4
P6	5	5	5	5
P7	4	4	4	4
P8	5	5	5	5
P9	5	5	5	5
P10	5	5	5	5
P11	5	5	5	5
P12	5	5	5	5

