



COURSE INFORMATION FORM

SEMESTER	SPRING
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COURSE CODE	151814554	COURSE NAME	Numerical Analysis
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SEMESTER	WEEKLY COURSE PERIOD			Course of		
	Lecture	Practice	Laboratory	Credit	ECTS	TYPE
4	3	0	0	3	4	NON-SELECTIVE (x) SELECTIVE ()
COURSE CATEGORY						
Math. and Basic Sciences			Professional Subjects [Put (√) below, if course contains considerable design.]		General	Other
x			()			
ASSESSMENT CRITERIA						
MID-TERM EXAM		Type		Quantity		%
		1st Mid-Term Exam.		1		40
		2nd Mid-Term Exam.				
		Quiz				
		Homework				
		Project				
		Report				
Other (.....)						
FINAL EXAM.				1		60
PREREQUISITE(S) OF COURSE						
COURSE DESCRIPTION		Solving nonlinear equations, solving sets of linear equations, difference tables, interpolation, extrapolation, numerical differentiation, numerical integration, least square approximations, numerical solution of ordinary differential equations, eigen values, eigen vectors				
COURSE OBJECTIVES		Teaching the students how to use the related numerical methods for the solving the engineering problems.				
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUCATION		Students will be able to solve engineering problems by help of numerical methods with computer programming.				
COURSE OUTCOMES		1.Solving nonlinear differential equations by applying numerical methods 2.Solving linear equations by using iterative methods 3. Calculating derivatives and integrals of functions known only at some discrete points 4.Curve fitting to given data by least square approximation 5.Solving ordinary differential equations by numerical methods				
TEXTBOOK		Applied Numerical Analysis , Curtis F. Gerald, Parick O. Wheatley				
OTHER REFERENCES		Nümerik Analiz , Prof Dr. Zekeriya Altaç Numerical Analysis , Richard L. Buraden, J. Douglas Faires				
TOOLS AND EQUIPMENTS						

COURSE SYLLABUS	
WEEK	TOPICS
1	Solving nonlinear equations
2	Solution of linear differential equations by direct methods
3	Solution of linear differential equations by iterative methods
4	Difference tables
5	Interpolation and extrapolation
6	Midterm I
7	Numerical differentiation
8	Numerical integration
9	Numerical integration by quadrature methods
10	Least square approximations
11	Midterm II
12	Numerical solution of ordinary differential equations, initial value problems
13	Boundary value problems
14	Eigen values, eigen vectors
15,16	

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems.		×	
2	Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and modeling experimental methods.			×
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.			×
4	Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies.			×
5	In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.			×
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.			×
7	Ability to communicate in written and oral forms in Turkish; proficiency at least one foreign language.			×
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.			×
9	Understanding of professional and ethical issues and taking responsibility			×
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.			×
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.			×
1:None. 2:Partially Contribution. 3: Completely Contribution.				

Lecturer: Prof. Dr. Necati Mahir

Signature:

Date: