FINITE ELEMENTS METHOD

1	Course Title:	FINITE ELEMENTS METHOD	
2	Course Code:	FZK3408	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	3	
6	Semester:	6	
7	ECTS Credits Allocated:	8.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	2	
11	Prerequisites:	-	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. AHMET PEKSÖZ	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	peksoz@uludag.edu.tr, (0224) 29 41 713, UÜ Fen Edebiyat Fakültesi, Fizik Bölümü 16059 Görükle Kampüsü, Bursa.	
17	Website:		
18	Objective of the Course:	To have detailed information on theoretical background of finite elements method, solution of problem, and current technological applications.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	The student understands the meaning of finite elements method and why this method is needed.
		2	The student learns the application areas of finite element method.
		3	The student will have information on numerical methods used in the solutions of problems.
		4	The student obtains information on the principles of finite elements method.
		5	The student will get the ability to use the method in the solution of electromagnetic problems using the package program.
		6	Gain the ability to use the method in the solution of electromagnetic problems using the package program.
		7	
		8	
		9	
		10	
21	Course Content:		
	Course Content:		
Week	Theoretical		Practice

1	Introduction to Finite Elements Method- A brief history, General description of the method, Basic steps the finite elements method, Domain discretization, Basic finite elements- One-dimensional, Two-dimensional, Three- dimensional
2	Classic methods for boundary-value problems, Boundary-value problem, The variational formulation
3	Ritz and Galerkin methods
4	One-dimensional finite elements method
5	Two-dimensional finite elements method
6	Application on the computer First Midterm Exam
7	Solution of axially simetrical problems, Application on the computer
8	Time dependent problems, Application on the computer
9	Numerical solution of finite element equations
10	Modeling- Geometry formation of the model, Material Identification, Mesh generation
11	Application of loads, Solution, Seeing the results

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	20	5.00	100.00
Homeworks	20	5.00	100.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	2	2.00	4.00
Others	0	0.00	0.00
Midterm Exam	1	2.00	2.00
Total Work Load			280.00
Total workload/ 30 hr			9.20
ECTS Credit of the Course			8.00

23 Assesment

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	2	50
Final Exam	1	50
Home work-project	0	0
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24 **ECTS / WORK LOAD TABLE**

2. ANSYS Help Tutorial, Version 11.

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	3	4	5	5	5	3	0	0	4	4	3	0	0	0	0	0
ÖK2	4	4	4	4	4	4	0	0	4	5	4	0	0	0	0	0
ÖK3	4	4	5	5	4	4	0	0	4	4	4	0	0	0	0	0
ÖK4	4	4	4	4	5	3	0	0	3	3	3	0	0	0	0	0
ÖK5	5	4	4	5	5	4	0	0	4	4	3	0	0	0	0	0
ÖK6	5	4	5	5	5	4	0	0	4	3	4	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**		**3 Medium**		**4 High**			**5 Very High**						