DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
BAU527	1			1
Title	**T**	**A**	**L**	**ECTS**
Active Structural Control	3	-	-	6

Language	Turkish					
Level	**Undergraduate**		**Graduate**	✓	**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	This course covers the basic concepts of structural control such as passive, semi-active and active control. After completing the course, the students will understand the difference between passive and active structural control. They will gain knowledge about the proportional integral derivative (PID) controller and are able to optimize the parameter of PID controller in active controlled structures under earthquake records using metaheuristic algorithms.					
Content	1. Introduction to the structural control 2. Type of active structural control and Control techniques 3. Introduction to Metaheuristic Algorithms 4. The structural responses of active tendon controlled structures using Matlab 5. The effect of time delay and control limit on the active tendon controlled structures					
Prerequisites	-					
Coordinator						
Lecturer(s)	Assistant. Prof. Dr. Serdar ULUSOY					
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	[1] Ulusoy, S. (2019). Yapı-zemin etkileşimi içeren yapı modellerinin optimum aktif kontrolü (Doctoral dissertation, Lisansüstü Eğitim Enstitüsü). [2] Nigdeli, S. M. (2012). Yakın Fay Etkisi Altındaki Yapılarda Aktif Tendonlar İle Yanal Yer Değiştirme Ve Burulma Kontrolü (Doctoral dissertation, Fen Bilimleri Enstitüsü).
Other Sources	

Additional Course Material	
Documents	-
Assignments	-
Exams	-

Course Composition		
Mathematics und Basic Sciences	40	%

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Engineering	30	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	30	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	40
Quiz		
Assignments	1	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	3	42
Assignments	1	8	8
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**96**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	
2	
3	
4	
5	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

6	
7	
8	
9	
10	
11	
12	
Weekly Content	
1	Introduction to the structural control
2	Type of active structural control and Control techniques
3	Introduction to Metaheuristic Algorithms
4	The structural responses of active tendon controlled structures using Matlab
5	The effect of time delay and control limit on the active tendon controlled structures
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	