AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Nonlinear Behavior of Reinforced Concrete Structures								
Course Code	MCE512		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Providing an understanding over nonlinear behavior of reinforced concrete structures on sectional/member/structural bases.								
Course Content	Introduction to Theory of Plasticity, Plastic Hinges and Moment Redistribution, Limit Design Methods, Deformations and Failure in Reinforced Concrete Members, Ductility (Displacement and Curvature Ductility), Static Collapse Mechanisms, Nonlinear Behavior in Codes.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	25
Final Examination	1	35
Assignment	5	15
Project	1	25

Recommended or Required Reading	
1	R. Park and T. Paulay, Reinforced Concrete Structures, John Wiley & Sons, 1975
2	Z. Celep, Betonarme Taşıyıcı Sistemlerde Doğrusal Olmayan Davranış ve Çözümleme, Beta Dağıtım, 2007.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to Theory of Plasticity
2	Theoretical	Introduction to Theory of Plasticity
3	Theoretical	Plastic Hinges and Moment Redistribution
4	Theoretical	Plastic Hinges and Moment Redistribution
5	Theoretical	Limit Design Methods
6	Theoretical	Limit Design Methods
7	Theoretical	Limit Design Methods
8	Theoretical	Deformations and Failure in Reinforced Concrete Members
9	Theoretical	Deformations and Failure in Reinforced Concrete Members
10	Theoretical	Ductility
11	Theoretical	Ductility
12	Theoretical	Static Collapse Mechanisms
13	Theoretical	Static Collapse Mechanisms
14	Theoretical	Nonlinear Behavior in Codes
15	Theoretical	Nonlinear Behavior in Codes
16	Final Exam	Final Examination

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	3	112
Assignment	5	8	0	40
Project	1	16	0	16
Midterm Examination	1	15	2	17

Final Examination	1	12	3	15
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	He/She can understand the basics of theory of plasticity
2	He/She can understand the plastic hinge formations and moment redistribution in reinforced concrete structures
3	He/She can understand the limit design approach
4	He/She can understand displacement/curvature ductility concepts for reinforced concrete sections
5	He/She can understand the static collapse mechanisms of multistory frames
6	He/She can understand how nonlinear behavior is included in the design/earthquake codes

Programme Outcomes *(Civil Engineering Master)*	
1	To be able to develop expertise knowledge in a Civil engineering area founded on their graduate competence.
2	To be able to use the theoretical and practical expertise knowledge gained in their specialty area.
3	To be able to use the information, problem solving and / or practical skills from the field, in interdisciplinary studies.
4	To be able to create new knowledge by integrating their knowledge area with the knowledge coming from different disciplines; and solve problems that need expertise by using scientific research methods
5	To be able to solve the problems related to his/her area by using appropriate research methods
6	To be able to devise a problem in their specialty area, develop a solution methodology, solve the problem, and interpret the results and take action if necessary
7	To be able to criticize the knowledge in their specialty area, guide the learning process, and independently direct high level studies
8	To be able to systematically communicate the recent developments in their specialty area and their own studies to groups both inside and outside their specialty area, orally, in writing and visually
9	To be able to use computer software at a level required by their specialty area with drawing upon information and communication technology at a high level
10	To be able to introduce scientific, technological, social and cultural advancements in the field of civil engineering and to contribute to the process of being an information of the society and to sustain it.
11	To be conscious of professional and ethical responsibility and contribute to the establishment of this consciousness.
12	To be able to protect social, scientific, and ethical values during collection, interpretation, and dissemination stages of the data associated with their specialty area; instruct and supervise these values
13	To be able to use at least one foreign language in a level to follow current developments related to the field.

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

	L1	L2	L3	L4	L5	L6
P1	5	4	5	4	5	4
P2	4	5	4	5	4	5
P3	5	4	5	4	5	4
P4	4	5	4	5	4	5
P5	5	4	5	4	5	4
P6	4	5	5	5	5	5
P7	5	4	4	4	4	4
P8	4	5	5	5	5	5
P9	5	5	4	4	4	4
P10	4	4	5	5	5	5
P11	5	5	4	4	5	4
P12	4	4	5	5	4	5
P13	5	5	4	4	5	4