AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Special Topics in Structural Analysis						
Course Code		MCE514		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 advanced topics in structural analysis						
Course Content		Stiffness Analysis of Frames, Principles of Virtual Work, Analysis of Frames by Virtual Work, Special Procedures in Structural Analysis (Condensation, Substructuring, Constraints, Joint Coordinates, Connections)						
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	W. McGuire, R. H. Gallagher and R. D. Ziemian, Matrix Structural Analysis, John Wiley & Sons, 2000
2	E. Sapountzakis and M. Papadrakakis, Matrix Methods for Advanced Structural Analysis, 1st Edition, 2017
3	H. I. Laursen, Structural Analysis, McGraw-Hill, 1978

Week	Weekly Detailed Course Contents	
1	Theoretical	Stiffness Analysis of Frames
2	Theoretical	Stiffness Analysis of Frames
3	Theoretical	Principles of Virtual Work
4	Theoretical	Principles of Virtual Work
5	Theoretical	Analysis of Frames by Virtual Work
6	Theoretical	Analysis of Frames by Virtual Work
7	Theoretical	Special Procedures in Structural Analysis (Condensation)
8	Theoretical	Special Procedures in Structural Analysis (Condensation)
9	Theoretical	Special Procedures in Structural Analysis (Substructuring)
10	Theoretical	Special Procedures in Structural Analysis (Substructuring)
11	Theoretical	Special Procedures in Structural Analysis (Constraints)
12	Theoretical	Special Procedures in Structural Analysis (Constraints)
13	Theoretical	Special Procedures in Structural Analysis (Joint coordinates)
14	Theoretical	Special Procedures in Structural Analysis (Connections)
15	Theoretical	Special Procedures in Structural Analysis (Connections)
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 stiffness method of analysis for frames
2	He/She can understand the virtual work principles
3	He/She can understand analysis of frames by virtual work method
4	He/She can understand the condensation, substructuring and constraints topics in stuctural analysis
5	He/She can understand how to analyze structures which have joint coordinate axes different from the global coordinates
6	He/She can understand how to deal with flexible connections and finite joint size in stiffness method

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	5	4	5
P2	4	5	4	4	5	4
P3	5	4	5	5	4	5
P4	4	5	4	4	5	4
P5	5	4	5	5	5	5
P6	4	5	4	4	4	5
P7	5	5	5	5	5	4
P8	4	4	4	4	4	5
P9	5	4	5	5	5	4
P10	4	5	4	5	5	5
P11	5	4	5	4	4	4
P12	5	5	4	5	5	5
P13	4	4	4	5	4	4