COURSE DESCRIPTION FORM	
Course Code and Title	CE384 STRUCTURAL ANALYSIS II
Semester	6
Catalog description	Indeterminate systems: Comparison between determinate and indeterminate structures, Classification of indeterminate systems, Analysis procedures of indeterminate systems, Force Method, Application steps of the force method, Analysis of indeterminate systems by force method under temperature changes, Analysis of indeterminate systems by force method under support settlements, Deflections of indeterminate systems: Virtual Work Method. The three moment equation, Application of the three moment equation. Displacement method of analysis, Analysis of frames with moment distribution method: No sidesway, Analysis of frames with slope-deflection equations: No sidesway, Analysis of frames with moment distribution method: Sidesway, Analysis of frames with slope-deflection equations: Sidesway, Müller-Breslau Principle.
Required reading	K. Girgin, M. G. Aksoylu ve K. Darılmaz, "Yapı Statiği (Hiperstatik Sistemler) Konu Anlatımı ve Çözümlü Problemler", Birsen Yayınevi, İstanbul, 2011.
Recommended reading	1. R. C. Hibbeler, "Structural Analysis", Prentice Hall Int., Eighth Edition in SI Units, Singapore, 2011. 2. R. C. Hibbeler, Çevirenler: K. Soyluk, T. Gültop, "Yapı Statiği ", Palme Yayıncılık, Dokuzuncu Baskıdan Çeviri, Ankara, 2017. 3. F. Karadoğan, S. Pala, E. Yüksel ve Y. Durgun, "Yapısal Çözümleme, Cilt II. Hiperstatik Sistemler: Kuvvet Yöntemi,", Birsen Yayınevi, İstanbul, 2015. 4. F. Karadoğan, S. Pala, E. Yüksel ve Y. Durgun, "Yapısal Çözümleme, Cilt III. Hiperstatik Sistemler: Yerdeğiştirme Yöntemleri,", Birsen Yayınevi, İstanbul, 2016.
ECTS	5
Prerequisites and co-requisites	Prerequisite of this course is: **CE383 STRUCTURAL ANALYSIS I** Required attendance to lectures is at least 70%
Compulsory/Elective	Compulsory
Language of instruction	English
Aim of course	To give the basic principles of indeterminate structural systems.
Learning outcomes of the course unit	**1.** Analysis procedures of indeterminate systems **2.** Solving the indeterminate systems by force and displacements methods under external loads, temperature changes and support settlements.
Mode of delivery	The mode of delivery of this course is face to face.
Course content	1. Indeterminate systems: Comparison between determinate and indeterminate structures, Classification of indeterminate systems, Analysis procedures of indeterminate systems 2. Force Method, Application steps of the force method 3. Analysis of indeterminate systems by force method under temperature changes, Analysis of indeterminate systems by force method under support settlements 4. Deflections of indeterminate systems: Virtual Work Method

	5. The three moment equation
	6. Application of the three moment equation
	7. Midterm
	8. Displacement method of analyses
	9. Analysis of frames with moment distribution method: No sidesway
	10. Analysis of frames with slope-deflection equations: No sidesway.
	11. Analysis of frames with moment distribution method: Sidesway
	12. Analysis of frames with moment distribution method: Sidesway
	13. Midtem / Analysis of frames with moment distribution method: Sidesway
	14. Analysis of frames with slope-deflection equations: Sidesway
	15. Müller-Breslau Principle.

Planned learning activities and teaching methods

3 lecture hours per week (3+0)
Web search and library work
Midterm exam and required works
Final exam and required works

Assessment methods and criteria

	Quantity	Percentage (%)
Mid-terms	2	60
Assignment	-	-
Exercises	-	-
Projects	-	-
Practice	-	-
Quiz	-	-
Contribution of In-term Studies to Overall Grade %		60
Contribution of Final Examination to Overall Grade (%)		40
Attendance		

Workload

Efficiency	Total Week Count	Weekly Duration (in hour)	Total Workload in Semester
Theoretical Study Hours of Course Per Week	14	3	42
Practicing Hours of Course Per Week	14	0	0
Reading	14	0	0
Searching in Internet and Library	14	2	28
Designing and Applying Materials	14	0	0
Preparing Reports	7	2	14
Preparing Presentation	14	0	0
Presentation	14	0	0

	Mid-Term and Studying for Mid-Term	2	15		30	
	Final and Studying for Final	1	15		15	
	Other	0	0		0	
	Total Workload:				129	
	Total Workload / 25:				5,16	
	ECTS:				5	

Course's contribution to program

No	Program Learning Outcomes	1	2	3	4	5
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.					X
2	Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.					X
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.			X		
4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively.			X		
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions.	X				
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams.	X				
7	Ability to work individually.					X
8	Ability to communicate effectively in Turkish, both orally and in writing; ability to write effective reports and comprehend written reports.	X				
9	Knowledge of English of B1 level according to Common European Framework of Reference.			X		
10	Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.	X				
11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.					X
12	Consciousness to behave according to ethical principles and professional and ethical responsibility.			X		
13	Knowledge on standards used in civil engineering practice.	X				
14	Knowledge about business life practices such as project management, risk management, and change management.	X				
15	Awareness in entrepreneurship, innovation; knowledge about sustainable development.	X				
16	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering.	X				

	17	Awareness of the legal consequences of engineering solutions.	X				
Name of lecturer(s) and contact information	Prof. Dr. Sinan ALTIN, saltin@gazi.edu.tr						
	Prof. Dr. Kurtuluş SOYLUK, ksoyluk@gazi.edu.tr						
	Doç. Dr. Sabahattin AYKAÇ, saykac@gazi.edu.tr						