(B) Course information in English

General course information:

Course title:	Structural Analysis II	**Course code:**	CE05_S02
Credits:	5	**Work load (hours):**	156
Course level:	Undergraduate ☒	Graduate ☐	
Course type:	Mandatory ☒	Selective ☐	
Course category:	Basic ☒	Orientation ☐	
Semester:	5th	**Hours per week:**	4

Course objectives (capabilities pursued and learning results):

The course includes the classical methods for the analysis of statically indeterminate structures, i.e. the flexibility and stiffness methods. Apart from the comprehension of the analysis methods, the target of the course is the indication of the advantages and disadvantages of the statically indeterminate structures with respect to statically determinate ones, depending on the specific application. The course also includes the determination of influence lines of statically indeterminate structures. As a result the students become familiar with the stress flow in statically indeterminate structures.

Prerequisites:

Mechanics I
Structural analysis I

Instructor's data:

Name:	Euripidis Mistakidis
Level:	Professor
Office:	101
Tel. – email:	24210 74171 – emistaki@uth.gr
Other tutors:	

Specific course information:

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Introduction to the flexibility method for the analysis of statically indeterminate structures.Compatibility relations.	**4**	**2**
2	Internal forces due to loading, support displacements, internal discontinuities and temperature effects.	**4**	**2**
3	Displacements and deflections with the flexibility method. Simplified methods for the determination of the displacements.	**4**	**2**
4	Influence lines using the flexibility method.	**4**	**2**
5	Continuous beams, statically indeterminate frames.	**4**	**2**
6	Statically indeterminate trusses. Formulation and analysis.	**4**	**2**
7	Applications of symmetry in statically indeterminate structures.	**4**	**2**
8	The stiffness method. General principles. The duality with the flexibility method.	**4**	**2**
9	Simplification of the stiffness method for the analysis of nonsway systems due to loading, support displacements,internal discontinuities and temperature effects.	**4**	**2**
10	Nonsway systems in which the truss equivalent is statically indeterminate. Determination of the axial forces.	**4**	**2**
11	Analysis of sway frames with the stiffness method.	**4**	**2**
12	Influence lines with the stiffness method.	**4**	**2**
13	Applications of symmetry in the analysis of structures with the stiffness method.	**4**	**2**
14	Combined application of the flexibility and stiffness methods.	**4**	**2**

Additional hours for:			
Class project	**Examinations**	**Preparation for examinations**	**Educational visit**
30 (2 extended projects)	3	25	-

Suggested literature:
1. Ι. Αβραμίδης, Στατική των Κατασκευών, Τόμος ΙΙ (Θεωρία), Εκδόσεις ΣΟΦΙΑ, Θεσσαλονίκη 2007. 2. Ι. Αβραμίδης-Κ. Μορφίδης, Στατική των Κατασκευών, Τόμος ΙΙβ (Ασκήσεις), Εκδόσεις ΣΟΦΙΑ, Θεσσαλονίκη 2007. 3. Γ. Νιτσιώτας, Στατική των Γραμμικών Φορέων, Τόμος Ι Εκδόσεις ΖΗΤΗ, Θεσσαλονίκη 1980. 4. A. Armenakas, Classical Structural Analysis: A Modern Approach, McGraw Hill Text, 1988. 5. A. Ghali, A.M. Neville, Structural Analysis, SPON Press.

Teaching method *(select and describe if necessary -* **weight***):*		
Teaching	☒	40 %
Seminars	☐	
Demonstrations	☐	
Laboratory	☐	
Exercises	☒	60 %
Visits at facilities	☐	
Other *(describe):* …….	☐	
Total		100%

Evaluation method *(select)*- **weight:**				
	written	*%*	*Oral*	*%*
Homework	☐		☐	
Class project	☒	30%	☐	
Interim examination	☐		☐	
Final examinations	☒	70%	☐	
Other *(describe):* ……	☐		☐	