ECTS

(B) Course information in English

General course information:

Course title:	Modelling of civil engineering structures	**Course code:**	ΔΟ1300
Credits:	6	**Work load (hours):**	195

Course level:	Undergraduate	☒	Graduate	☐
Course type:	Mandatory	☐	Selective	☒
Course category:	Basic	☐	Orientation	☒
Semester:	10th	**Hours per week:**	4	

Course objectives (capabilities pursued and learning results):

The main objective is the comprehension of modeling methods for civil engineering structures. The course is taught through computer software and includes characteristic cases of civil engineering structures. Special attention is given to points where the unsuccessful modeling may lead to significant mistakes. The course contains the following:

Structural types

- Framed structures
- Plate structures
- Structures with both frame and planar elements (plates, walls, etc)
- Foundations.

Analysis types

- Static analysis
- Dynamic analysis
- Soil-structure interaction

Materials

- Concrete
- Structural steel
- Composite members
- Mixed structures (containing elements of different materials)

The course contains also the following:

- Methods for quick error identification
- Results interpretation
- Connection of structural analysis with design

Prerequisites:

- Structural Analysis I
- Structural Analysis II
- Structural Analysis III

Instructor's data:

Name:	Stylianos Pardalopoulos
Level:	Teaching Staff
Office:	
Tel. – email:	pardalopoulos@uth.gr
Other tutors:	-

Specific course information:

Week No.	**Course contents**	**Hours**	
		Course attendance	**Preparation**
1	Introduction on the simulation structures.	4	5
2	Basic structural systems of buildings, linear and non-linear analysis.	4	5
3	Simulation of R.C. buildings. Basic principles, Member eccentricities & effective stiffness, Dynamic Analysis, Eigen modes.	4	5
4	Simulation of R.C. buildings. Static and Response spectrum analysis.	4	5
5	Example of simulation and analysis of a 3-storey R.C. building.	4	5
6	Simulation of walls as linear and shell finite elements.	4	5
7	Multistorey composite structures.	4	5
8	Simulation and analysis of a multistorey composite building.	4	5
9	Introduction on the simulation of steel structures	4	5
10	Simulation example of a 3D steel structure.	4	5
11	Static analysis of a 3D steel structure.	4	5
12	Buckling of steel structures	4	5
13	Design of usual types of steel structures	4	5
14	Design of special types of steel structures	4	5

Additional hours for:			
Class project	**Examinations**	**Preparation for examinations**	**Educational visit**
50	**3**	**16**	

Suggested literature:

1. Avramidis I., Athanatopoulou A., Athanasiadis K., Morfidis K. (2005). “Numerical Examples of Structural Analysis”, Aivazis Publications (in Greek).
2. Avramidis I., Athanatopoulou A., Morfidis K., Sextos A. (2011). “Seismic Design of R.C. Buildings and Numerical Examples”, Sofia Publications (in Greek).
3. Koliopoulos P.K., Manolis G.D. (2005). «Dynamic of structures with applications to the seismic mechanics», Giourdas Publications (in Greek).
4. Avramidis I., Athanatopoulou A., Morfidis K. (2016). “The Finite Element Method. Simulation and Analysis of Structures. A practical introduction”, Sofia Publications (in Greek).

Teaching method *(select and describe if necessary -* **weight***):*		
Teaching	☒	30 %
Seminars	☐	
Demonstrations	☐	
Laboratory	☒	40 %
Exercises	☒	30 %
Visits at facilities	☐	
Other *(describe):* ……	☐	
Total		100%

Evaluation method *(select)*- **weight:**				
	Written	*%*	*Oral*	*%*
Homework	☐		☐	
Class project	☒	25%	☒	25%
Interim examination	☐		☐	
Final examinations	☒	50%	☐	
Other *(describe):* ……	☐		☐	