ECTS

(B) Course information in english

General course information:

Course title:	Computational Hydraulics with Applications in Hydraulic Works	**Course code:**	ΥΔ0400
Credits:	5	**Work load (hours):**	4
Course level:	Undergraduate ■	Graduate ☐	
Course type:	Mandatory ☐	Selective ■	
Course category:	Basic ☐	Orientation ■	
Semester:	7th	**Hours per week:**	4
Course objectives (capabilities pursued and learning results):			
Gaining knowledge on modern programming environments used in engineering. Theoretical study and laboratory practice on phenomena analysed in class, especially in solving real-life engineering problems, partial differential equations (parabolic, elliptic, hyperbolic) and statistical analysis.			
Prerequisites:			

Instructor's data:

Name:	A. Liakopoulos
Level:	Professor
Office:	Laboratory of Hydromechanics and Environmental Engineering
Tel. – email:	aliakop@civ.uth.gr
Other tutors:	

Specific course information:

Week No.	**Course contents**	**Hours**	
		Course attendance	**Preparation**
1	Programming issues, MatLab and Computational Hydraulics	4	0
2	Least Squares Methods – Applications with MatLab	4	2

3	Data Analysis I. Statistical Methods	4	1
4	Data Analysis II. Statistical Methods.	4	1
5	Fourier Analysis	4	2
6	Ordinary Differential Equations	4	2
7	Partial Differential Equations - Categories	4	2
8	Parabolic flow equations - examples.	4	2
9	Parabolic flow equations - examples.	4	1
10	Elliptic flow equations - examples.	4	2
11	Hyperbolic flow equations - examples.	4	2
12	Open channel flows	4	1
13	Advection-Diffusion examples	4	1
14	Review	4	0

Additional hours for:			
Class project	**Examinations**	**Preparation for examinations**	**Educational visit**
30			

Suggested literature:

1. C. Koutitas, Computational Hydraulics, Xanthi, (in greek), 1982
2. Introduction to Numerical Methods for Water Resources, W.L. Wood
3. A. Liakopoulos – F. Sofos, Notes on Numerical Hydraulics
4. Related notes and examples on e-class

Teaching method *(select and describe if necessary -* **weight***):*		
Teaching	■	30%
Seminars	■	
Demonstrations	■	10%
Laboratory	■	30%

Exercises	■	30%
Visits at facilities	☐	….%
Other *(describe):* ……	☐	….%
Total		100%

Evaluation method *(select)*- **weight:**				
	written	*%*	*Oral*	*%*
Homework	■	20	☐	
Class project	■	30	☐	
Interim examination	☐		☐	
Final examinations	☐		☐	
Other *(describe):* …semester project……	■	40	■	10