

Course information in english

General course information:

Course title:	Water Resources Systems	Course code:	CE09-H05
Credits:	4	Work load (hours):	125
Course level:	Undergraduate <input checked="" type="checkbox"/>	Graduate	<input type="checkbox"/>
Course type:	Mandatory <input checked="" type="checkbox"/>	Selective	<input type="checkbox"/>
Course category:	Basic <input type="checkbox"/>	Orientation	<input checked="" type="checkbox"/>
Semester:	9	Hours per week:	4
Course objectives (capabilities pursued and learning results):			
<ul style="list-style-type: none"> • Water resources systems analysis techniques (joint ones included) • Water resources systems / water networks Performance Indicators • Deterministic and Stochastic approaches • Water resources systems management /simulation/optimization models (joint ones included) • Tools and models 			
Prerequisites:			
<ul style="list-style-type: none"> • Hydraulics • Hydrology • Groundwater Hydraulics • Water supply & distribution networks • Water Resources Management • Statistics – Probability theory 			

Instructor's data:

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Level:	Assistant Professor
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Specific course information:

Α/Α βδομάδας διδασκαλίας	Περιεχόμενα του μαθήματος	Ώρες	
		Παρακολούθησης	Προετοιμασίας εκτός ωρών παρακολούθησης
6	Μοντέλα προσδιορισμού χρόνου ζωής συστημάτων (λειτουργία, διαχείριση)	8	4
7-8	Διαχείριση και αξιολόγηση λειτουργικής ετοιμότητας Υδροδοτικών Συστημάτων - Δείκτες αξιολόγησης	8	4
9	Εργαλεία αξιολόγησης λειτουργικής ετοιμότητας. Το εργαλείο WB/PI Calc-UTH.	4	
10-11	Μοντέλα προσομοίωσης. Το εργαλείο	8	

Α/Α βδομάδας διδασκαλίας	Περιεχόμενα του μαθήματος	Ώρες	
		Παρακολούθησης	Προετοιμασίας εκτός ωρών παρακολούθησης
	WaterCad		
12-13	Οικονομική Θεώρηση – Ειδικά Τεχνικά Θέματα & Εφαρμογή. Υδατικό Ισοζύγιο Συστημάτων Υδατικών Πόρων (πόρος→ καταναλωτής). Κοστολόγηση και Τιμολόγηση νερού. Ανάκτηση πλήρους κόστους νερού (άμεσο, περιβαλλοντικό, πόρου)	8	4
14	Ολικηρωμένη Μεθοδολογία	4	4

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Water resources systems management approaches (Worth living development). National / EU legislation (WFD 2000/60, N.L.3199/2003, P.D/ 51/2007). Water resources management under specific conditions (coastal, transnational, protected, vulnerable)	4	2
2	Introduction to systems analysis theory. Joint management techniques, Alternative paths (arcs, blocs), complete mixing assumption theory. Optimization techniques	4	2
3	Deterministic and Stochastic approaches. Water resources systems management /simulation/optimization models (joint ones included)	4	4
4	Decision Making process and tools (EDAMS, EDSS)	4	4
5	Water Resources Systems Evaluation. Reliability, Availability, Hazard, Risk analysis, Significance, Vulnerability	4	4
6	Life cycle analysis Repair or replace dilemma analysis	4	4
7-8	Water networks Performance Assessment/Indicators	8	4
9	Water Audit Tools. WB/PI Calc-UTH.	4	
10-11	Simulation Models. WaterCad	8	
12-13	Water resources systems Water Balance Estimation techniques & tools Supply & Demand management Costing and pricing technics regarding the urban water Full water cost recovery principal (direct cost, environmental cost, cost of the natural resource)	8	4
14	Integrated Methodology (stepwise)	4	4

Additional hours for:			
Class project	Examinations	Preparation for examinations	Educational visit
		33	

Suggested literature:

1. Notes & papers
2. G. Tsakiris, "Hydraulic Works, Planning & Management, Vol. I: Urban Hydraulic Works», Symmetria Eds., 2010
3. M. Mimikou, "Water Resources Technology" (in Greek), Pappasotiriou eds., p.564
4. Kapur K. & L. Lamberson: "Reliability in Engineering Designs", Wiley, NY, 1977

Teaching method (select and describe if necessary - weight):		
Teaching	<input checked="" type="checkbox"/>	50%
Seminars	<input type="checkbox"/>%
Demonstrations	<input checked="" type="checkbox"/>	20%
Laboratory	<input type="checkbox"/>%
Exercises	<input checked="" type="checkbox"/>	30%
Visits at facilities	<input type="checkbox"/>%
Other (describe):	<input type="checkbox"/>%
Total		100%

Evaluation method (select)- weight:				
	<u>written</u>	<u>%</u>	<u>Oral</u>	<u>%</u>
Homework	<input type="checkbox"/>		<input type="checkbox"/>	
Class project	<input checked="" type="checkbox"/>	50%	<input type="checkbox"/>	
Interim examination	<input type="checkbox"/>		<input type="checkbox"/>	
Final examinations	<input checked="" type="checkbox"/>	50%	<input type="checkbox"/>	
Other (describe):	<input type="checkbox"/>		<input type="checkbox"/>	