

## COURSE OUTCOME

### KM561 – HYDROLOGY – MANAGEMENT OF WATER RESOURCES

#### 1. GENERAL

<b>INSTITUTION</b>	University of Thessaly		
<b>SCHOOL</b>	Technology		
<b>DEPARTMENT</b>	Forestry, Science of Wood and Design		
<b>LEVEL</b>	<i>Undergraduate</i>		
<b>CODE</b>	KM 561	<b>STUDENT SEMESTER</b>	5th
<b>COURSE TITLE</b>	HYDROLOGY – MANAGEMENT OF WATER RESOURCES		
<b>ACTIVITIES</b>		<b>WEEKLY HRS</b>	<b>ECTS</b>
	Theoretical Part	2	5
	Exercises	1	
		<b>3</b>	<b>5</b>
<b>TYPE OF COURSE</b>	Mandatory Core Course		
<b>PREREQUISITES:</b>	none		
<b>LANGUAGE TEACHING AND EXAMINATION:</b>	Greek		
<b>THE COURSE OFFERED TO STUDENTS ERASMUS</b>	No		
<b>WEBPAGES COURSE (URL)</b>			

#### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b>
<p>Upon successful completion of the course students will be able to:</p> <p><b>At the knowledge level</b></p> <ul style="list-style-type: none"> <li>• Understand the hydrologic processes of water in nature, the movement of water in torrents, the effect of vegetation on the hydrologic cycle, the effects of torrents on the wider environment, the effect of forest vegetation on snow and finally the basic principles of management.</li> <li>• To deepen in the basic principles of Watershed Management.</li> </ul> <p><b>At the skill level</b></p> <ul style="list-style-type: none"> <li>• Be able to delineate the watershed boundaries</li> <li>• To recognize the most important hydrologic processes of water in nature, the effect of vegetation on the hydrologic cycle.</li> <li>• To prepare comprehensive studies for the management of mountain river watersheds</li> <li>• To design, study, implement and supervise the construction projects for mountain water management such as dams, culverts, etc.</li> <li>• To calculate all the relevant parameters required for the integrated management of watersheds and the study of mountain water management projects.</li> <li>• To propose measures for the protection and restoration from damages from flood phenomena in mountainous areas</li> </ul> <p><b>At the competence level</b></p> <ul style="list-style-type: none"> <li>• To combine and compose complex data concerning the integrated management of torrent and stream watersheds</li> <li>• To acquire skills of supervising technical water resources management projects</li> <li>• To fully integrate the knowledge they acquire from the curriculum in a specialized field of application (water resources management).</li> </ul>
<b>General Skills</b>

Upon successful completion of the course, the students will be able to develop and cultivate basic professional and social skills:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Teamwork
- Decision making
- Demonstration of social, professional and moral responsibility
- Respect for the natural environment
- Work in an international environment
- Promoting free, creative and inductive thinking
- Production of new research ideas

### 3. COURSE CONTENT

Description of the theoretical part:  
Hydrologic cycle and forest vegetation. Effect of vegetation on rainfall interception. Effect of vegetation on snow. Interception and stemflow from vegetation. Evapotranspiration and vegetation. Rainfall analysis and methods to measure rainfall them. Water flow in torrents. Water supply. Sediment transport capacity in torrents. Management principles and systems. Water policy - relevant legislation, Decisions of Ministries, Regions, etc.

Description of the laboratory part:  
Introduction. Determination of the watershed and delineation of its boundaries. Morphometric characteristics of torrent and stream watersheds (Area - Shape - Elevation - Slopes). Hydrographic characteristics of torrent and stream watersheds (Classification systems - Network density - Branching coefficient). Calculation of runoff rate and average annual rainfall. Stream flow velocity. Estimation of water sediment discharge. Torrent sediment coefficient. Estimation of critical channel slopes.

### 4. TEACHING AND LEARNING METHODS - EVALUATION

<b>DELIVERY METHOD</b>	An application of combined educational methods and techniques in order to enhance the active participation of students in the course with the aim at the greatest possible effectiveness in "face to face" teaching:  Lectures (in the amphitheater) enriched with real examples, questions - answers and discussion.	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	<ul style="list-style-type: none"> <li>• Use of computers, PowerPoint presentations, projector, videos of small duration.</li> <li>• Support of the educational process through the electronic platform e-class.</li> </ul>	
<b>MANAGEMENT OF TEACHING</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	26
	Seminars	13
	Studio workshops	11
	Individual and work study for term assignment	25
	Term assignment presentation	50
	<b>Course Total</b>	<b>125</b>
<b>STUDENT EVALUATION</b>		

	<p>Application of formative and overall evaluation procedures.</p> <p>A. The evaluation of the theoretical course is done at the end of the semester with written exams. The process of the final exams is the standard one that is followed in all the courses of the Department.</p> <p>In agreement with the students who wish, the evaluation of the theoretical course can be done with mid-term exams that will be conducted on an agreed date within the semester, according to the program of the Department.</p> <p>B. The evaluation of the laboratory course is done in two ways, either with: (a) short written exams at the end of the semester that will be held on an agreed date within the semester, according to the program of the Department, or with (b) at the end of the semester with written exams. The process of the final exams is the standard that is followed in all the courses of the Department.</p> <p>Only the students who have completed the required number of attendances have the right to participate in the evaluation of the laboratory course.</p> <p>In all cases, the ways of examining the theoretical and laboratory course are agreed with the students at the beginning of the semester.</p>
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## 5. RECOMMENDED-BIBLIOGRAPHY

Available at EUDOXOS

- Λαμπράκης Ν. 2018. Μαθήματα Εφαρμοσμένης και Περιβαλλοντικής Υδρογεωλογίας. Εκδόσεις: Liberal Books (Κωδ. ΕΥΔΟΞΟΣ: 77119714)
- Warren, V., and G. Lewis. 2010. Εισαγωγή στην Υδρολογία. Εκδόσεις: ΙΩΝ (Κωδ. ΕΥΔΟΞΟΣ: 14816)
- Σούλιος Γ. 2010. Γενική υδρογεωλογία. Εκδόσεις: UNIVERSITY STUDIO PRESS (Κωδ. ΕΥΔΟΞΟΣ: 17171)

Not available at EUDOXOS

- Κωτούλας Δ. 1979. Διευθετήσεις χειμαρρωδών ρευμάτων, Μέρος Ι, Θεσσαλονίκη.
- Κωτούλας Δ. 1981. Διευθετήσεις χειμαρρωδών ρευμάτων, Μέρος ΙΙ, Θεσσαλονίκη.
- Κωτούλας Δ. 1979. Μαθήματα δασικής Υδρολογίας, Θεσσαλονίκη.
- Μαργαρόπουλος Π. 1963. Η υδατική διάβρωση και το χειμαρρικό φαινόμενο. Αθήνα.
- Μουλόπουλος Χ. 1968. Ορεινή Υδρονομική. Θεσσαλονίκη