

2 ADVANCED ENGINEERING HYDROLOGY – FLOOD DEFENSE PROJECTS

<u>Teachers:</u>	Tsoukalas I.	Assis. Professor
	Maris F.	Professor
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The course covers the following topics:

1. Rain-drainage models: model Lutz, model Soil Conservation Service
2. Rainfall and drainage models: black-box and physical models based on the unit hydrogram
3. Empirical and semi-empirical methods of calculating potential and actual vaporization as rain loss
4. Hydrological methods of flood passage through a reservoir
5. Hydrological methods for transiting flood through river section (Muskingum)
6. Flood prevention projects: flood prevention and traffic,
7. Flood protection projects in the mountainous part of a watercourse basin
8. Drought indicators
9. Frequency analysis of maximum or minimum values of rainfall heights and water supplies
10. Time series analysis
11. Numerical examples
12. HEC-HMS Hydrological Software
13. Subject (work at home) for the implementation of Sections 1, 3, 4 and 6

Upon completion of the course the student is able to:

- To possess the knowledge for the calculation of the water supply due to rainfall at the outlet of a catchment area.
- To possess the knowledge for the calculation of potential and actual vaporization as a category of rain losses.
- Apply his knowledge to the passage of a flood wave through a reservoir or through a section of a river.
- To combine his knowledge to design and dimensionalize flood containment and transit projects, as well as projects in the mountainous part of a watercourse basin.
- Assess whether there is extensive drought in a water catchment area.
- Evaluate the incidence of maximum or minimum values of rainfall heights and water supplies.
- To understand the extension of time in an artificial way of an existing time series of measured water supplies.
- Implement and understand HEC-HMS hydrological software.
- To combine his knowledge in order to be able to carry out hydrological studies in practice.

Teaching Mode: 3 hours suggestion-exercises / week